

A REVISION OF THE PAPUAN PARADOXOSOMATIDAE  
(DIPLOPODA, POLYDESMIDA) IN THE MUSEO CIVICO  
DI STORIA NATURALE AT GENOA\*)

BY

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ABSTRACT

This paper treats the following species described by SILVESTRI from New Guinea: *Strongylosoma fasciatum*, *S. versicolor*, *S. longipes*, *S. albipes*, *S. oenologum*, *S. sanguineum*, *S. loriae*, *Eustrongylosoma orthogona*, and *E. longesignatum*. All these are redescribed. *S. fasciatum*, *S. versicolor*, *S. oenologum* and *E. longesignatum* are referred to *Eustrongylosoma* Silv., and the genus is redefined and its relationship discussed. *Thalathipurus* Att. is a new synonym of *Eustrongylosoma*; *T. fasciatus* has to be renamed *E. bifasciatum* nom. nov. *S. loriae* is referred to *Noibrosoma* Att., and the genus is redefined. *S. albipes* is referred to *Aschistodesmus* Poc. *S. longipes* and *S. sanguineum* could not be properly placed as to genus; the first species is noteworthy because of its aberrant pore formula: 5, 7, 9—19. *E. orthogona* is referred to *Helicorhomborpha* Att.; the species of this genus are tentatively enumerated. The description of *Hoplatessara luxuriosa* (Silv.) is extended.

In 1895 SILVESTRI published a report on the Centipedes and Millipedes from New Guinea collected by several famous Italian naturalists like L. LORIA, O. BECCARI, and L. M. D'ALBERTIS. The material was fairly rich in species and, in view of the then very scanty data on the Myriapoda of New Guinea, its treatment could have formed a solid base for future studies on the groups in the area.

Unfortunately, however, the quality of SILVESTRI's taxonomic work at the time did not yet come up to the standard of that of most of his contemporaries, and, although it is only fair to add that his subsequent publications showed a rapid improvement in this respect, practically all of the new millipede species described in the 1895 paper remained virtual nomina nuda.

The nine Papuan Paradoxosomatidae that SILVESTRI described shared the general fate of the other millipedes and passed into oblivion. Some years ago, thanks to the courtesy of Dr. F. CAPRA, I had already the opportunity to throw some light on the identity of two of these species, viz. *Strongylosoma luxuriosum* Silv. and *S. maculatum* Silv. (JEEKEL, 1956, 1964). In the present paper the veil over the remaining seven species is lifted.

In 1898 two other paradoxosomatid species from New Guinea were described by SILVESTRI. Here at least the descriptions were accompanied by intelligible

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gonopod drawings; this opportunity is taken to extend SILVESTRI's summary diagnoses.

The material treated in this paper was studied during a stay at the Museo Civico di Storia Naturale at Genoa in 1964. I am very much indebted to Prof. Dr. E. TORTONESE and Dr. DELFA GUIGLIA for ample working facilities provided.

### *Eustrongylosoma* Silvestri

1896 *Eustrongylosoma* Silvestri, Annali Mus. civ. Stor. nat. Genova 36: 198.

1932 *Thalattipurus* Attems, in: Van Straelen (ed.), Rés. sci. Voy. Indes Or. Néerl. Léopold 3 (12): 10.

Type-species. — *Strongylosoma fasciatum* Silvestri, 1895, by original designation. (Type-species of *Thalattipurus*: *T. castaneus* Attems, 1932, by original designation).

Diagnosis. — 20 somites; poreformula normal. Head without particulars. Antennae of moderate length, more or less distinctly clavate. Collum of about the same width as the head.

Somites weakly to moderately constricted. Stricture narrow. Transverse furrow present from the 5th somite onwards and weakly impressed or obsolete. Pleural keels present in a number of somites of the anterior half of the body.

Lateral keels rather weakly developed, those of the 2nd somite somewhat below the level of those of the 3rd. Keels just above the middle of the sides, subhorizontal. Posterior edges acutely angular projecting at least in some somites behind the caudal margin of the somites. Lateral margins entire.

Sternites of middle somites broader than long, or a little longer than broad; sternal cones absent or abortive. Sternite of 5th somite of male with a single process between the anterior legs. Length of legs moderate to long. Tarsal brushes of male present at least in legs of anterior half of the body. Legs of male without modifications.

Gonopod coxa of moderate length, moderately stout, somewhat incrassate at distal end. Prefemur short, subovoid, laterally well demarcated from the femur. Femur long, straight, with or without a lamellate expansion on the anterior side. Spermal channel running straight along the medial side of the femur. Postfemoral region not demarcated. Solenomerite arising from the medial side of the femoral end, long, almost entirely sheathed by the tibiotarsus, curving laterad, cephalad, and sometimes also proximad again. Tibiotarsus consisting of a solenophore only, its lamina lateralis basally produced proximad into a rounded lobe. Laterad of the base of the solenophore the postfemoral region of the femur is more or less distinctly produced distad.

Remarks. — To this genus have been referred so far the following four species: *E. fasciatum* (Silv., 1895), from New Guinea, *E. insulare* Silv., 1897, from the Caroline Islands, *E. transversefasciatum* Silv., 1897, from Australia, and *E. longesignatum* Silv., 1898, from New Guinea. Of these, *E. transversefasciatum* was based on a female specimen and cannot be placed properly. For geographical reasons it must be excluded from *Eustrongylosoma*, and the description and

illustrations seem to point to a species of the Australiosomatini. *E. insulare* was based on a mutilated male specimen. The gonopod drawing by SILVESTRI is small and insufficient. The species may be related to *Eustrongylosoma* but the gonopods apparently lack the postfemoral projection latero-distad of the base of the solenophore, which seems to be characteristic for the true species of *Eustrongylosoma*. Also the lamellar expansion of the basal portion of the tibiotarsus is not found in the other known species of the genus. The only true species of *Eustrongylosoma* besides the type-species seems to be *E. longesignatum*. To these two species can now be added two species formerly referred to *Strongylosoma* Brandt, viz. *E. versicolor* (Silv., 1895) and *E. oenologum* (Silv., 1895).

Closely related to *Eustrongylosoma fasciatum* are two species from New Guinea for which ATTEMS erected the genus *Thalatthipurus* Att., 1932. Therefore *Eustrongylosoma* now contains the following species:

<i>E. fasciatum</i> (Silv.)	<i>E. versicolor</i> (Silv.)
<i>E. bifasciatum</i> nom. nov. (= <i>Thalatthipurus fasciatus</i> Att.)	<i>E. oenologum</i> (Silv.)
<i>E. castaneum</i> (Att.)	<i>E. longesignatum</i> Silv.

Of these, *fasciatum*, *bifasciatum* and *castaneum* are closely related, as shown by the furcate end of the epiproct and the shape and striation of the distal end of the tibiotarsus of the gonopods. In fact, these three species seem to form the nucleus of the future genus *Eustrongylosoma*, for the other species, *versicolor*, *oenologum* and *longesignatum* differ in several characters, in particular those of the external morphology, and may represent one or two distinct genera.

Among the better known paradoxosomatid genera, *Eustrongylosoma* comes nearest to *Nothrosoma* Attems, 1929, treated also in the present paper, and to *Perittotresis* Attems, 1914. The latter genus, based on *P. leuconota* Attems, 1914, from New Guinea, differs in the weak development of the lateral keels and the presence of medio-dorsal pores on the metasomites of the 5th to 18th somites. In the gonopods *Perittotresis* apparently lacks the distal production of the postfemoral region beyond the base of the tibiotarsus. The tibiotarsus itself has both the lamina medialis and the lamina lateralis basally produced into a rounded lobe.

Undoubtedly closely related to these genera are *Papuosoma* Chamberlin, 1945, and *Mimosoma* Chamberlin, 1920, from New Guinea and the Solomon Islands, respectively, but the five species referred to each of these are to be re-examined before a more definite opinion on their status can be given. At least some of the species of *Papuosoma* at present appear to be congeneric with *Eustrongylosoma*.

Also belonging to the group of genera around *Eustrongylosoma* is the genus to be erected for *Atropisoma horvathi* Silvestri, 1899, and *Atropisoma insulare* Silvestri, 1899, both from New Guinea. For geographical reasons these two species do not belong in one genus with the type-species of *Atropisoma* Silvestri, *A. elegans* Silvestri, 1897, which was based on a female specimen from Queensland. Judging from the external characters, *A. elegans* may be a species of *Solaenodolichopus* Verhoeff, 1924, but this can only be verified by re-examination of the type or by study of topotypical material. At any rate, *A. horvathi* and *A. insulare*

have nothing to do with *A. elegans*. Their gonopods show affinities to those of *Eustrongylosoma*, but the creation of a new genus for them is deferred until the actual examination of pertinent material.

Key to the species. — The few species now referred to *Eustrongylosoma* differ among each other in quite a number of external features, and may be distinguished with the aid of the following key.

1. Epiproct strongly bifid: the end with a pair of long, somewhat downward-curved points . . . . . 2
- Epiproct truncate, with a pair of rounded tubercles or cones . . . . . 4
2. Posterior edges of the lateral keels of the 2nd to 4th somites rounded. Colour castaneous, the dorsum paler, yellowish . . . . . *E. castaneum* (Att.)
- Posterior edges of the lateral keels of the 2nd to 4th somites acuminate. Colour dark brown, the dorsum with a yellow median band, the sides below keels yellowish . . . . . 3
3. Width of male 2.3 mm. Metatergites without transverse furrow . . . . . *E. bifasciatum* nom. nov.
- Width of male 3.2—3.6 mm. Metatergites with a transverse furrow from the 5th to the 17th or 18th somites . . . . . *E. fasciatum* (Silv.)
4. Sixth antennomere longer than the 2nd. Pleural keels present at least up to the 6th somite. Lateral keels ventrally distinctly demarcated, the dorsal furrow typically curving inward at anterior end . . . . . *E. longesignatum* Silv.
- Sixth antennomere shorter than the 2nd. Pleural keels absent from the 5th somite onwards. Lateral keels ventrally demarcated only near their posterior edge, the dorsal furrow not curved inward anteriorly . . . . . 5
5. Lateral parts of caudal margin of somites ciliate. Tarsal brushes of legs of male absent in the second half of the body. Width of male 3.7 mm. Metatergites ornated by two pairs of oblique yellowish stripes . . . . . *E. versicolor* (Silv.)
- Caudal margin of somites without hairs. Tarsal brushes of legs of male present in all legs. Width of male 1.6 mm. Metatergites with only traces of a narrow paler middorsal stripe . . . . . *E. oenologum* (Silv.)

### *Eustrongylosoma fasciatum* (Silvestri)

1895 *Strongylosoma fasciatum* Silvestri, Annali Mus. civ. Stor. nat. Genova 34: 642.

1896 *Eustrongylosoma fasciatum*; Silvestri, Annali Mus. civ. Stor. nat. Genova 36: 198.

Material. — This species was based on material from two localities. In the Genoa Museum there are seven specimens: five from Hughibagu and two from Moroka, which, however, belong to two species. The species conforming to the description of SILVESTRI is represented only by two males and one female from Hughibagu, and one of the males of this species I have selected and labelled as lectotype. Two female specimens from Hughibagu and the two female specimens from Moroka belong to a quite different species.

New Guinea: Hughibagu, 19-31.V.1891 (coll. L. LORIA), ♂ lectotype, ♂ paratype, ♀ paratype.



## Description

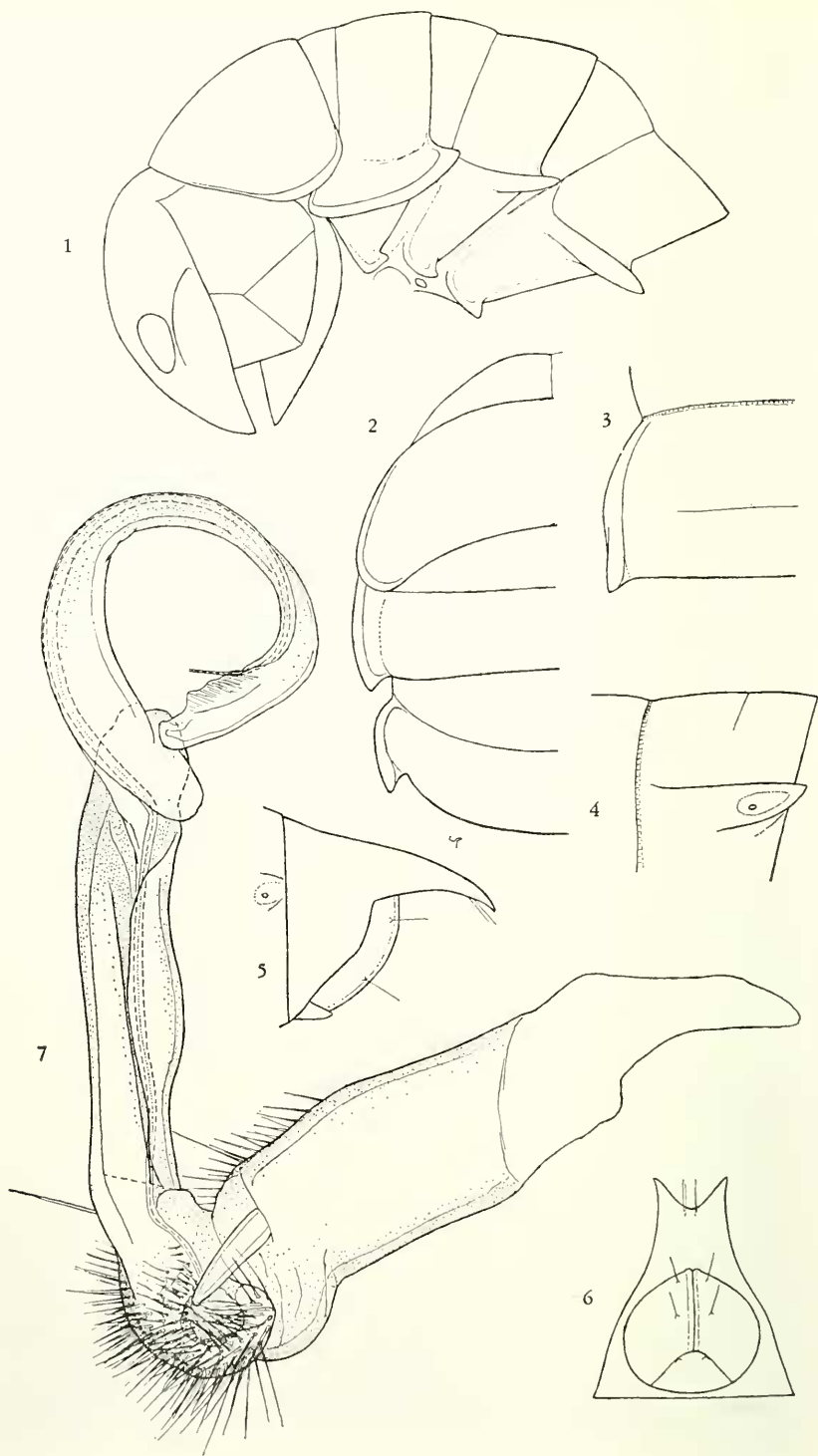
Colour. — Head rather dark brown to castaneous, slightly paler in the frontal and clypeal regions. Antennae of the same dark colour, the apex whitish. Collum dark brown, with a yellow median stripe, narrow anteriorly and widening somewhat in caudal direction, the sides of this stripe a little concave. Lateral margin of collum somewhat paler than the dark ground colour. Somites dark greyish brown, with a continuous median yellow stripe, narrowest in the area of the stricture and broadest at the posterior margin of the tergites. Largest width of median stripe about half the width of the metasomites, narrowest width of stripe equal to two fifths of the width of the metasomites. Keels almost entirely or only in the posterior part yellowish. Lower half of the sides yellowish gray in the males; in the female almost the whole of the sides yellowish. Sternites and legs brownish yellow to pale castaneous. Anal somite dark greyish brown, with a broad yellow median band; the epiproct entirely yellowish. Paraproct dark grey brown. Ventral side of the anal somite and the hypoproct pale.

Width. — Lectotype ♂ : 3.2 mm; paratype ♂ : 3.2 mm; paratype ♀ : 3.6 mm.

Head and antennae. — Labrum moderately deeply and rather widely emarginate, tridentate. Clypeus rather weakly convex, moderately impressed towards the labrum; the lateral borders faintly concave. Headplate smooth, shiny, rather densely setiferous in the clypeal region, frons almost hairless, vertex with one pair of hairs; the hairs short, longer only above the labrum. Antennal sockets separated by scarcely one and a quarter times the diameter of a socket, or by almost three quarters of the length of the 2nd antennomere. Postantennal groove rather shallow, the wall in front rather weakly prominent. Vertex moderately convex. Vertigial sulcus rather weakly impressed, ending just above the upper level of the antennal sockets. Antennae of moderate length, rather stout, slightly clavate. Pubescence weak in the proximal antennomeres to rather dense in the distal ones. Length of antennomeres:  $2 = 3 > 4 = 5 > 6$ ; the 6th antennomere five sixths of the length of the 2nd.

Collum. — (Fig. 1—2). Somewhat wider than the head. Anterior border faintly concave in the middle, widely convex more laterad, and straight along the lateral sides. Posterior border faintly concave, faintly convex more laterally, a slight notch near the lateral rounding. Lateral border widely rounded, very slightly asymmetrical. Surface smooth and shiny, hairless. Transverse convexity weak in the middle, much stronger laterally. Marginal rim rather thick and a little elevated, well defined, fading away towards the middle of the anterior border.

Somites. — Constriction weak. Prosomites dulled by a fine cellular structure. Stricture narrow, rather sharply set off from the prosomites, finely ribbed dorsally to halfway down the sides. Metatergites smooth and shiny, finely rugulose near the lateral keels, hairless. Transverse furrow present from the 5th to the 17th or 18th somite, fine and sharp, but weakly impressed, remaining rather distant from the dorsal delimitation of the lateral keels. Sides granular up to the 4th somite, smooth or with some fine wrinkles in the subsequent somites. Pleural keels up to the 4th somite represented by strongly developed, rounded ridges ending caudally in a triangular lappet, which projects distinctly behind the posterior margin of the



somites. In the 5th, 6th and 7th somites the ridges are developed mainly in their posterior part, with the caudal triangle projecting well beyond the posterior margin, in particular in the 6th somite. In the 8th somite there is only a triangle projecting slightly behind the margin; in the 9th somite there is only a slight remnant of a triangular lappet, which does not project caudad of the margin. From the 10th somite onwards pleural keels are totally absent.

Lateral keels. — (Fig. 1—4). Rather weakly developed. 2nd somite a little wider than the collum; the 3rd somewhat narrower than the 2nd, and about equal to the 4th. Keels of the 2nd somite somewhat below the level of those of the 3rd, rather strongly declined. Anterior border widely rounded, the latero-anterior edge narrowly rounded. Lateral border widely rounded; the latero-posterior edge practically right-angled, subacuminate. Posterior border slightly emarginate. The posterior edge rather strongly projecting caudad of the posterior margin. Marginal rim rather thick, well defined on all sides. Keels of the 3rd somite dorso-ventrally scarcely wider than those of the 2nd somite. Lateral border anteriorly widely rounded, posteriorly almost straight. Latero-posterior edge acutely angular, pointed. Posterior border faintly concave. Keels of the 4th somite similar to those of the 3rd, but latero-anteriorly more widely rounded, and with the posterior edge more acute. Keels of the 5th and subsequent somites dorso-ventrally rather narrow, especially the poreless keels. Dorsal demarcating furrow almost reaching the stricture. Ventral demarcation distinct only in the caudal half of the keels. Lateral border widely rounded to almost straight near the posterior edge, in the poriferous keels widely emarginate in the pore area. Posterior border slightly concave or straight. Posterior edges acute-angled and projecting distinctly behind the margin of the somites. Towards the caudal end of the body the posterior edges are gradually less developed but in all somites except in the 19th they project behind the margin. Pores lateral, in an elliptical excavation.

Sternites and legs. — Sternites of middle somites just over one and a quarter times as broad as long. Cross impressions without a distinct longitudinal furrow, but with a very wide and shallow longitudinal impression; the transverse furrow generally interrupted in the middle. Pubescence rather weak. Sternite of the 5th somite with a laminate, subquadrate process between the anterior legs, which has the lateral edges narrowly rounded, and the distal border straight or weakly excised. In profile the anterior side of the process is directed straight downward, the posterior side obliquely cephalad. Distal end at anterior side with a dense brush of short setae. At the caudal side of the base of the process a widely separated pair of small cones each bearing a tuft of long hairs. Transverse furrow distinct; posterior part of the sternite deeply excavated, and raised only slightly above the ventral level of the metasomal ring. Pubescence rather dense. Sternite of the 6th

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Fig. 1—7. *Eustrongylosoma fasciatum* (Silv.). 1, left side of head and first four somites of paratype ♂, lateral aspect; 2, left side of head and first three somites of lectotype ♂, dorsal aspect; 3, left side of 10th somite of paratype ♂, dorsal aspect; 4, the same, lateral aspect; 5, anal somite of paratype ♂, lateral aspect; 6, the same, ventral aspect; 7, right gonopod of lectotype ♂, medial aspect

somite weakly elevated, at caudal side even level with the ventral side of the metasomite except at the coxal bases. Transverse furrow present. Sternite of the 7th somite with a pair of swellings latero-cephalad of the gonopod opening. Sternite of the 8th somite scarcely raised between the anterior legs; the transverse furrow present. Legs of the middle and posterior part of the body rather long and rather slender, those of the anterior part somewhat shorter. Pubescence rather sparse. Distal tibial brushes present in a few anterior legs, but rapidly thinning out. Tarsal brushes present up to the legs of the 17th somite, though thin there, and absent in the legs of the 18th somite. Length of podomeres:  $3 > 6 > 2 = 5 > 4$ ; the 3rd podomere two times as long as the 6th.

Anal somite. — (Fig. 5—6). Epiproct broad and rather long. The sides widely concave; the end with a pair of elongate, finely pointed and slightly diverging cones which are curved obliquely downward. No distinct lateral setiferous tubercles. Underside of epiproct a little concave. Paraprocts rugulose; the rims rather high and rather narrow; the setae on weak tubercles. Hypoproct triangular, the sides practically straight, the end rounded. Setiferous tubercles rather weakly developed, not projecting.

Gonopods. — (Fig. 7). Coxa moderately stout, straight, widening distad at caudal side. Latero-distal side setiferous. Prefemur rather short, sub-ovoid, the beginning of the spermal channel is marked by a characteristic circular pit. Femur elongate, slender, straight, laterally distinctly demarcated from the prefemur, the demarcation almost transverse on the main axis of the femur. Femur with a medio-anterior longitudinal crest and a medio-posterior laminate expansion curled up along the axis. Spermal channel running straight along the medial side of the femur towards the base of the solenomerite. No postfemoral region demarcated, the femur produced a little distad of the base of the tibiotarsus. Tibiotarsus consisting only of a solenophore which sheathes the solenomerite almost over its entire length. Lamina lateralis of solenophore typically produced proximad into a rounded lobe. Solenophore without lateral branches, ending in a rounded lamina, which is preapically striolate. Tibiotarsus and solenomerite long, curving laterad and cephalad and finally proximad and caudad.

Female. — A little more robust than the male. The dorsal yellowish stripe relatively a little broader, about two thirds of total width. Antennal sockets separated by two thirds of the 2nd antennomere. Antennae relatively more slender, scarcely clavate. Pleural keels of 2nd and 3rd somites as in the male, those of the 4th somite less produced caudally. In the 5th somite there is only a weak ridge, not produced caudad. The 6th and 7th somites without pleural keels. Lateral keels less produced caudad, those of the 17th and 18th somites scarcely so. Sternites one and a half times broader than long. The legs relatively a little shorter and more slender. Tail with the unci less developed, although curved downward as in the male.

Remarks. — As shown by the deeply bifurcate epiproct and by the peculiarities of the gonopods and in particular the apex of the tibiotarsus, this species must be closely related to the two species which ATTEMS referred to his genus *Thalathipurus*. The two are, however, markedly smaller (width of ♂: 2.3 mm), and the gonopod femur is more convex anteriorly. Unfortunately, it is not known



whether the two species described by ATTEMS are in possession of a circular pit on the medial side of the gonopod prefemur, a feature not found in the other examined species of *Eustrongylosoma*, and therefore characteristic for *fasciatum*.

*Eustrongylosoma bifasciatum* nom. nov.

1932 *Thalathipurus fasciatus* Attems, Rés. sci. Voy. Indes Or. Néerl. Léopold 3 (12): 12, pl. 2 fig. 23, pl. 3 fig. 24.

Distribution. — New Guinea: between Siwi and Camp 3, Sakoemi.

Remarks. — As the name *fasciatum* is already preoccupied in the genus *Eustrongylosoma* a new name for this species was necessary.

*Eustrongylosoma castaneum* (Attems)

1932 *Thalathipurus castaneus* Attems, Rés. sci. Voy. Indes Or. Néerl. Léopold 3 (12): 11, pl. 2 fig. 20—22.

Distribution. — New Guinea: Angi Gita.

*Eustrongylosoma versicolor* (Silvestri)

1895 *Strongylosoma versicolor* Silvestri, Annali Mus. civ. Stor. nat. Genova 34 : 643.

Material. — There is a single male specimen in the Genoa Museum which I have labelled as holotype.

New Guinea: Gerekanumu, Mtes. Astrolabe, II.1893 (coll. L. LORIA), ♂ holotype.

Description

Colour. — Head castaneous, the antennae a little paler, their apex whitish. Collum castaneous, with a fine and indistinct pale median stripe; the lateral sides also a bit paler. Groundcolour of somites also castaneous. Prosomites with a rather narrow pale median stripe, which on the metatergites widens in caudal direction so as to form a yellowish triangle. The posterior half of this triangle includes a small dark median triangle broadest at the posterior margin of the tergite. On each side of the median triangle and separated from it by a dark oblique band, a triangular yellowish spot, broadest at the stricture and ending before the posterior margin of the tergite. Lateral keels dark, the posterior part, in the poriferous keels from the pore onwards, yellowish. Venter, sternites and legs pale castaneous to yellowish brown. Anal somite castaneous. Dorsal side of epiproct yellowish, the yellow colour anteriorly continued in a narrow median stripe. Margins of the paraprocts and the whole of the hypoproct yellowish.

Width. — 3.7 mm.

Head and antennae. — Labrum weakly and rather widely emarginate, tridentate. Clypeus moderately convex, rather strongly impressed towards the labrum; the lateral borders practically straight, without notch near the labrum. Headplate

somewhat rugulose above the labrum, with rather dense, fine, setiferous punctation up to the lower part of the vertex, the hairs short to very short. Remainder of vertex smooth, shiny, with a single pair of hairs. Antennal sockets separated by one and two fifths times the diameter of a socket or by slightly more than half the length of the 2nd antennomere. Postantennal groove rather well impressed, the wall in front moderately prominent. Vertex moderately convex; the vertex sulcus moderately impressed, running downwards to just above the upper level of the antennal sockets. Antennae of moderate length, moderately slender, somewhat clavate. Pubescence moderate in the proximal antennomeres to dense in the distal ones. Length of antennomeres:  $2 = 3 = 4 > 5 = 6$ ; the 6th antennomere five sixths of the length of the 2nd.

Collum. — (Fig. 8—9). Somewhat wider than the head, oblong reniform in dorsal outline. Anterior border straight or faintly convex in the middle, more convex laterally, and straight or faintly concave along the lateral side. Posterior border weakly concave in the middle, faintly convex laterally and with a weak notch above the lateral rounding. Lateral border widely and symmetrically rounded. Surface smooth, shiny, with some hairs arranged in two rows. Posterior margin laterally with a few tiny hairs. Transverse convexity practically even. Marginal rim of lateral border narrow, soon disappearing along the anterior border.

Somites. — Constriction weak. Prosomites dulled by a fine cellular structure. Stricture narrow, sharply demarcated from the prosomite, finely beaded down to just below the level of the lateral keels. Metatergites shiny, mostly hairless. Transverse furrow present from the 5th to the 18th somite, sharp but not deeply impressed, without sculpture, remaining separated from the dorsal delimitation of the lateral keels by about the dorso-ventral width of a poriferous keel. Sides generally smooth and shiny, up to the 5th somite longitudinally wrinkled, but not granular. Along the caudal margin of the somites a row of tiny hairs from just above the lateral keels down to about the lateral border of the sternite. Pleural keels represented by weak ridges in the 2nd and 3rd somites, and by a slight swelling in the 4th, absent from the 5th somite onwards.

Lateral keels. (Fig. 8—11). Rather weakly developed. 2nd somite slightly wider than the collum. 3rd somite narrower than the 2nd or 4th. Keels of the 2nd somite below the level of those of the 3rd, declined. Anterior border widely rounded; the latero-anterior edge rather narrowly rounded. Lateral border weakly convex, a little more strongly rounded towards the posterior edge. Posterior border slightly concave. Posterior edge obtuse-angled, pointed, projecting behind the margin of the somite. Marginal rim narrow. Keels of the 3rd somite dorsoventrally wider than those of the 2nd. Lateral border widely rounded. Posterior edge about right-angled. In lateral aspect the dorsal delimitation of the keels is rather concave. Keels of the 4th somite subsimilar to those of the 3rd, but the lateral border more widely rounded, and the dorsal side of the keels less concave. Keels of the 5th and subsequent somites of moderate dorsoventral width, the poreless keels of about half the width of the poriferous ones. Dorsal furrow remaining rather widely separated from the stricture. Lateral border very weakly rounded, in the poriferous keels faintly emarginate in the pore area. Posterior edges slightly acute-angled, but not pointed, caudally produced and projecting somewhat behind the caudal

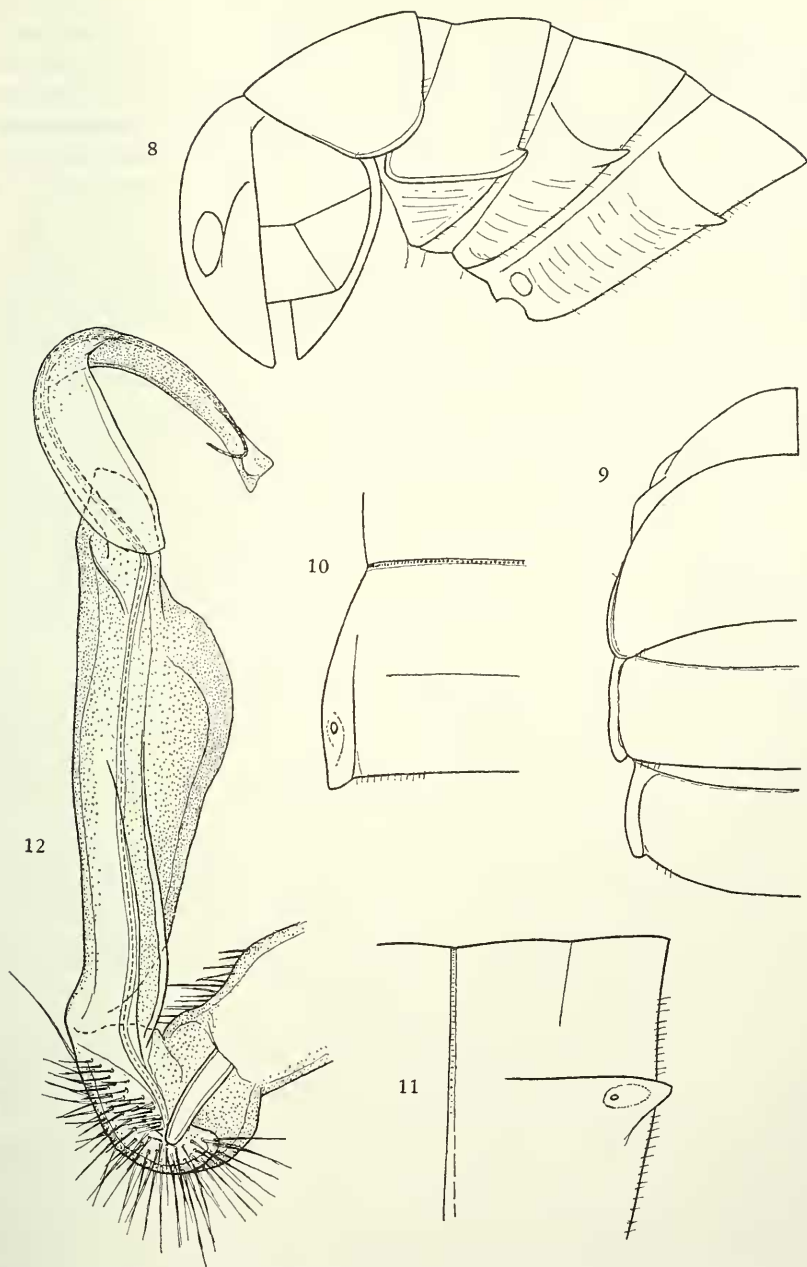


Fig. 8—12. *Eustrongylosoma versicolor* (Silv.), holotype ♂. 8, left side of head and first four somites, lateral aspect; 9, left side of head and first three somites, dorsal aspect; 10, left side of 10th somite, dorsal aspect; 11, the same, lateral aspect; 12, right gonopod, medial aspect

margin in all somites. Keels ventrally demarcated only near the posterior edge. Pores lateral and somewhat dorsal, visible from above, in a distinct excavation.

Sternites and legs. — Sternites of the middle somites a little broader than long. Cross impressions with the longitudinal impression wide and shallow; the transverse furrow almost obsolete in the middle. At the base of the posterior legs of each sternite the almost obsolete remnant of a sternal cone. Pubescence rather dense, in the posterior sternites moderate, the hairs short. Sternite of the 5th somite with a rather thick, subquadrate process between the anterior legs, its lateral edges rounded, the distal border slightly excised. Anterior side densely set with short setae; the end scarcely projecting in front of the sternal margin. Behind the process a transverse furrow; the posterior part of the sternite normal. Sternite of the 6th somite widely excavated, but the middle not level with the ventral side of the metasomal ring. Sternite of the 7th somite with a weak transverse ridge in front of the gonopod opening, interrupted in the middle. Sternite of the 8th somite somewhat excavated between the anterior legs, otherwise normal. Legs long and rather slender; a few anterior legs somewhat incrassate. Pubescence ventrally rather dense, dorsally moderate, the tarsi rather densely setiferous on all sides. Distal half of prefemur densely to very densely pubescent on the ventral side, except in the last six to eight pairs of legs. Tarsal and distal tibial brushes very dense in the anterior legs, thinning out gradually and absent from the legs of the 10th somite onwards. Length of podomeres:  $3 > 6 > 5 > 2 > 4$ .

Anal somite. — Epiproct rather broad, rather short, the sides straight and weakly convergent. End truncate, a little emarginate. Preterminal lateral tubercles minute. Paraprocts with rather low and moderately thick rims; no setiferous tubercles. Hypoproct narrow trapezoidal, broad at the base, the sides a little emarginate, strongly convergent. Posterior border straight. Setiferous tubercles inconspicuous.

Gonopods. — (Fig. 12). Similar to those of *fasciatum*, but differing in the following points. Prefemur without the circular pit on the medial side at the base of the spermal channel. Femur with the anterior longitudinal crest less developed and disappearing distad of the middle. At the anterior side of the femur a laminate expansion, so that in medial aspect the femur widens considerably distad, with the broadest point at about two thirds of its length. Tibiotarsus comparatively shorter than in *fasciatum*, its apex rather broadly truncate.

Remarks. — The species is rather disjunct from *fasciatum* and may represent a distinct genus, as shown by the characters of the gonopods, lateral keels and anal somite, but a wider knowledge of the Papuan Paradoxosomatidae must be attained before the proper relations between the species groups can be determined.

In the Genoa Museum there is also a glass tube, labelled "Eustrongylosoma versicolor (Silv.), N. Guinea Britannica, L. Loria", containing 7 ♂ and 4 ♀ of a species which could not be properly distinguished from the type specimen of *E. versicolor*, except that the specimens were much smaller. The males had a width varying between 2.2 and 2.7 mm, the females were measuring 2.9 tot 3.3 mm. As an exact locality is lacking from the label, I refrain from an evaluation of the taxonomic position of this material. Obviously the material did not belong to the type series, as it was identified by SILVESTRI after the erection of the genus *Eustrongylosoma*.



***Eustrongylosoma oenologum* (Silvestri)**

1895 *Strongylosoma oenologum* Silvestri, *Annali Mus. civ. Stor. nat. Genova* 34: 644.

**Material.** — In the Genoa Museum there is a single male specimen, which lacks the 5th somite and the left gonopod. I have labelled it as holotype.

New Guinea: Moroka, 1300 m, II.1893 (coll. L. LORIA), ♂ holotype.

**Description**

**Colour.** — Head and antennae castaneous, paler in the labral region of the head. Collum and subsequent somites castaneous with traces of a rather narrow paler middorsal stripe on pro- and metasomites. Ventral side and legs, as well as the anal somite pale castaneous.

**Width.** — 1.6 mm.

**Head and antennae.** — Labrum moderately deeply and rather widely emarginate, tridentate. Clypeus moderately convex, moderately impressed towards the labrum; the lateral borders faintly convex, without distinct notch above the labrum. Head-plate smooth and shiny, with rather dense setiferous punctation up to the lower part of the vertex; middle of vertex with one pair of hairs. Antennal sockets separated by slightly more than the diameter of a socket or by two thirds of the length of the 2nd antennomere. Postantennal groove of moderate depth; the wall in front rather weakly prominent. Vertex moderately convex; the vertigial sulcus very weakly impressed, remaining rather far distant from the upper level of the sockets. Antennae of moderate length and moderate width, distinctly clavate. Pubescence moderate in the proximal antennomeres to dense in the distal ones. Length of antennomeres:  $2 = 3 > 4 > 5 > 6$ ; the 6th antennomere amply three quarters of the length of the 2nd.

**Collum.** — A little narrower than the head, subtrapezoidal in dorsal outline. Anterior border faintly convex in the middle, a little more convex more laterally, and straight along the lateral sides. Posterior border widely and weakly concave in the middle, faintly convex more laterally and along the lateral sides, without notch. Lateral border rather widely rounded. Surface smooth, shiny, with some hairs arranged in two rows. Transverse convexity rather weak in the middle, stronger towards the sides; the lateral sides not at all raised. Marginal rim laterally narrow and weakly defined, soon fading away anteriorly.

**Somites.** — Constriction rather weak. Prosomites somewhat dulled by a fine cellular structure. Stricture rather narrow, anteriorly rather sharply demarcated from the prosomites, dorsally finely beaded down to halfway the sides, smooth below. Metatergites shiny, smooth, with a few hairs. Transverse furrow present from the 5th to the 18th somite, rather well impressed, rather wide, reaching almost the upper demarcation of the lateral keels; no distinct sculpture. Sides smooth, also in the anterior somites. Pleural keels present only in the 2nd and 3rd somites: weak ridges which are dorsally demarcated by a furrow.

**Lateral keels.** — (Fig. 13—14). Rather weakly developed. 2nd somite scarcely wider than the collum. 3rd somite a little narrower than the 2nd, and practically as wide as the 4th. Keels of the 2nd somite narrow, crest-like. Anterior border

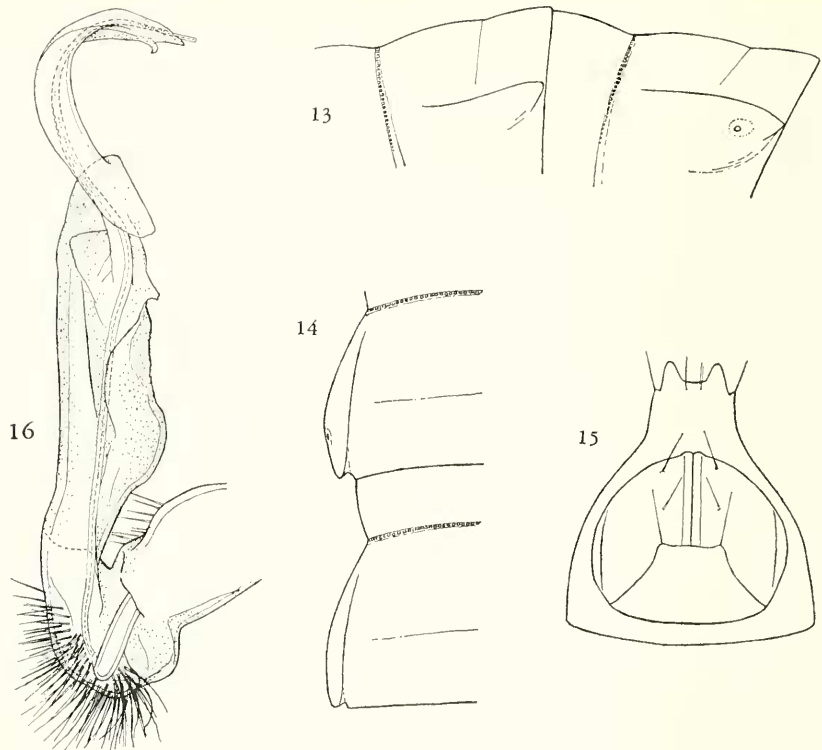


Fig. 13—16. *Eustrongylosoma oenologum* (Silv.), holotype ♂. 13, left side of 11th and 12th somites, lateral aspect; 14, left side of 10th and 11th somites, dorsal aspect; 15, anal somite, ventral aspect; 16, right gonopod, medial aspect

weakly rounded, at the latero-anterior edge a small latero-ventral triangular tooth. Lateral border straight. Posterior edge about right-angled, narrowly rounded, very little produced behind the posterior margin of the somite. Marginal rim narrow and weakly defined. Keels of the 3rd and 4th somites somewhat higher than those of the 2nd, also ridge-like but dorsoventrally a little thicker than those of the 2nd. Dorsal demarcating furrow reaching the waist, a little curved with concavity upwards. Lateral borders faintly convex. Posterior edge acutely angular, almost pointed, projecting very slightly behind the posterior margin of the somites. Keels of the 5th and subsequent somites rather thick dorso-ventrally, especially in the poriferous somites, somewhat inflated. Lateral border weakly rounded. Posterior edges slightly acute-angulate, narrowly rounded or a little pointed, slightly produced, from the 15th to the 19th somite projecting a little behind the posterior margin. In lateral aspect the poriferous keels are dorsally weakly convex, the poreless faintly concave. Ventral demarcation of keels distinct only near the posterior edges. Pores in a slight excavation, directed laterad and slightly dorsad.

Sternites and legs. — Sternites of the middle somites slightly longer than wide. Cross impressions with the longitudinal impression shallow and wide, and the transverse furrow indistinct in the middle. Pubescence rather sparse. According to SILVESTRI the sternite of the 5th somite (which is missing now) has a short

laminate process between the anterior legs. Sternite of the 6th somite rather deeply longitudinally excavated in the middle and scarcely raised above the ventral level of the metasomal ring there. Sternites of the 7th and 8th somites without particulars. Legs of moderate length, somewhat incrassate, with the prefemur thickest. The anterior legs slightly more incrassate than the others. Pubescence rather sparse, and only in the tibiae and tarsi more dense. Tibial and tarsal brushes present in all legs, thinning out in the two last pairs only. Length of podomeres:  $3 > 6 > 2 = 5 > 4$ ; the 6th about five sixths of the length of the 3rd.

Anal somite. — (Fig. 15). Epiproct of moderate length and width, the sides converging weakly. Preterminal lateral tubercles distinct. The end rather broad, with a pair of rounded cones directed straight backwards. Paraprocts a little rugulose, the marginal rims of moderate width and height. Setae not on tubercles. Hypoproct trapezoidal; the sides straight, a little concave towards the end. Posterior border faintly convex, the setiferous tubercles slightly produced.

Gonopods. — (Fig. 16). Very similar to those of the preceding species, and differing only in details of the femur and the apex of the tibiotarsus. In medial aspect the femur is widest proximad of the middle and the anterior margin distad of the widest part is finely serrulate. Near the base of the solenomerite a small triangular projection. The femur lacks the two parallel longitudinal crests in the basal half present in *versicolor*, but instead there are two crests beyond the middle of the femur. Apex of tibiotarsus pointed, and with a preapical small uncate process.

Remarks. — This species seems to come nearest to *E. versicolor*, as shown by the gonopods and the shape of the lateral keels. Yet it differs in many points from *versicolor*, and the two certainly are not closely related.

### *Eustrongylosoma longesignatum* Silvestri

1898 *Eustrongylosoma longesignatus* Silvestri, *Annali Mus. civ. Stor. nat. Genova* 39: 442, fig. 3—4.

Material. — In the Genoa Museum there is a single male specimen of this species which lacks the 7th and 8th somites, including the gonopods, as well as the sternal area of the 5th somite. Possibly SILVESTRI has retained slides which he may have made of the gonopods and the sternite of the 5th somite. I have labelled the specimen as holotype.

New Guinea: Bujakori, VIII.1890 (coll. L. LORIA), ♂ holotype.

### Description

Colour. — Head and antennae blackish brown; the labral area of the head slightly paler; antennomeres with slightly paler distal annuli. Collum black, with a faintly demarcated reddish longitudinal band of moderate width. Subsequent somites blackish, with a similar pale band on pro- and metasomites. Sternites dark brown; the legs reddish brown. Anal somite of the same colour as the preceding somites; the pale band running to the end of the epiproct.

Width. — 1.6 mm.

Head and antennae. — Labrum weakly and rather widely emarginate, tridentate.

Clypeus weakly convex, moderately impressed towards the labrum; the lateral borders widely rounded, without notch near the labrum. Headplate a little rugulose in the clypeal area, otherwise smooth, shiny, moderately to sparsely setiferous up to above the antennal sockets; vertex with one pair of hairs. Antennal sockets separated by one and one third times the diameter of a socket, or by five sixths of the length of the 2nd antennomere. Postantennal groove widely and rather deeply impressed; the wall in front moderately prominent. Vertex rather weakly convex; the vertigial sulcus moderately impressed, remaining rather distant from the upper level of the antennal sockets. Antennae of moderate length, stout, distinctly clavate. Pubescence rather weak in the proximal antennomeres to rather dense in the distal ones. Length of antennomeres:  $6 > 4 = 2 < 3 = 5$ ; the 6th antennomere one and one third times as long as the 2nd.

Collum. — Somewhat narrower than the head, reniform in dorsal outline. Anterior border about straight in the middle, widely rounded laterally. Posterior border widely emarginate in the middle, faintly convex laterally. Sides rather widely and symmetrically rounded. Surface smooth, polished, hairless, moderately convex in the middle, more strongly so towards the sides, which are slightly incurved. Marginal rim laterally rather thin, practically fading away along the anterior border.

Somites. — Constriction moderate. Prosomites somewhat dulled by a fine cellular structure. Stricture of moderate width, well demarcated from the prosomite, dorsally distinctly beaded down to the level of the keels, faintly striate or smooth below that level. Metatergites smooth and shiny. Transverse furrow rather well impressed, faintly sculptured, present from the 5th to the 18th somite, weakly indicated in the 3rd, 4th and 19th somites. In some somites also a faint median furrow. Sides smooth, granular above the legs in the anterior somites only. Pleural keels of the 2nd to 4th somites represented by rounded ridges. In the 3rd somite slightly produced into a right-angled lappet, which does not project behind the margin. In the 4th somite the posterior lappet is obtuse-angled and not produced. In the 5th and 6th somites the pleural keels are more strongly developed and represented by conspicuously thick rounded ridges above the posterior legs, not produced caudally (7th and 8th somites missing). In the 9th somite pleural keels are completely lacking.

Lateral keels. — (Fig. 17—18). Rather weakly developed. 2nd somite a little wider than the collum, and as wide as the 3rd. The 4th somite slightly wider than the 3rd. Keels of the 2nd somite somewhat below the level of the keels of the 3rd somite, sloping downward a little in anterior direction. Anterior border widely rounded; the latero-anterior edge obtuse-angled, narrowly rounded, and thrust a little forward. Lateral border widely rounded. Posterior border short; the latero-posterior edge obtuse-angled and narrowly rounded, produced caudally and projecting a little behind the margin. Keels of the 3rd somite thicker dorso-ventrally than those of the 2nd. Lateral border widely rounded. The posterior edge obtuse-angled and narrowly rounded. Keels of the 4th somite similar to those of the 3rd, but the lateral border anteriorly more narrowly rounded, and the posterior edge obtuse-angled, but pointed. Posterior edges of the 3rd and 4th somites scarcely projecting behind the margin. In lateral aspect the dorsal side of the keels is prac-



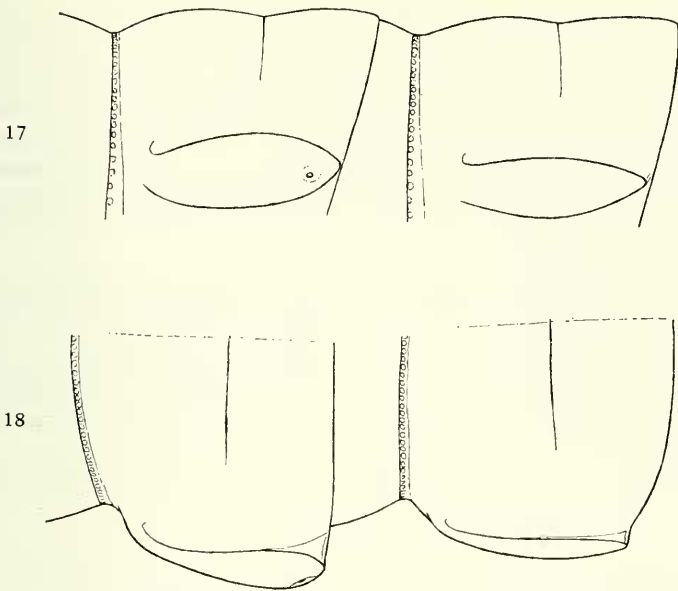


Fig. 17—18. *Eustrongylosoma longesignatum* Silv., holotype ♂. 17, left side of 10th and 11th somites, lateral aspect; 18, the same, dorsal aspect

tically straight. Keels of the 5th and subsequent somites rather wide dorso-ventrally. The lateral borders widely convex, in the poriferous keels more strongly rounded near the anterior and posterior ends. Posterior edges mostly obtuse-angled, becoming acute-angled and pointed from the 16th somite onwards and projecting a little behind the margin from that somite onwards. Dorsal delimitation of keels widely arched in lateral aspect, particularly in the poriferous keels. Dorsal furrow not reaching the stricture, but typically curving upwards and even backwards a little at the anterior end. Ventral demarcation distinct, giving the keels a typical elongate elliptical outline in lateral aspect. Pores lateral in a small and almost circular excavation.

Sternites and legs. — Sternites of middle somites one and one third times broader than long. Cross impressions well developed; the transverse furrow a little deeper than the longitudinal one. Pubescence moderate. Sternite of 5th somite according to SILVESTRI with a short, semicircular process between the anterior legs. Sternite of the 6th somite rather deeply excavate, particularly between the posterior legs; the transverse furrow obsolete in the middle; the middle not raised above the ventral level of the metasomite. (7th and 8th somites missing). Legs of moderate length, a little incrassate, in particular the anterior legs. The two ultimate pairs a little shorter than the preceding legs, but without modifications, except that the tarsi are rather slender. Ventral pubescence rather dense in the prefemora and femora, moderate in the remaining podomeres. Dorsal pubescence sparse. Tibial and tarsal brushes present up to the legs of the 13th somite, of moderate thickness and gradually thinning out. Length of podomeres:  $6 > 3 > 2 > 5 > 4$ ; the 6th podomere one and a quarter times as long as the 3rd.

Anal somite. — Epiproct very broad at the base, of moderate length and moderately thick, a little concave ventrally. Sides rather strongly convergent, with the preterminal lateral tubercles prominent. The end of moderate width, with a pair of very weak terminal knobs, separated by a slight emargination. Paraprocts somewhat uneven; the rims moderately high and of moderate width. Setiferous tubercles weakly developed. Hypoproct broadly trapezoidal; the sides concave; the end weakly rounded. Setiferous tubercles weakly developed, not projecting.

Gonopods. — See SILVESTRI.

Female. — Unknown.

Remarks. — It is an unfortunate circumstance that the type specimen is not complete, and in particular that its gonopods are missing. SILVESTRI's gonopod drawing is small, and although it shows clearly the estrongylosomatine characters of the species, it cannot be properly compared. There are some features in the external morphology of this species, as the relative length of the antennomeres and the shape of the lateral keels, which show that it is quite distinct from the type of the genus, and *longesignatum* may well represent a different genus.

### "Strongylosoma" sanguineum Silvestri

1895 *Strongylosoma sanguineum* Silvestri, Annali Mus. civ. Stor. nat. Genova 34: 645.

Material. — In the Genoa Museum there are two female specimens of this species which have now been labelled as lectotype and paratype respectively.

New Guinea: Moroka, 1300 m, II.1893 (coll. L. LORIA), ♀ lectotype, ♀ paratype.

### Description

Colour. — Reddish castaneous, the ventral side scarcely paler. Antennae yellowish, the 6th and 7th antennomeres a little infuscate, the apex whitish. Legs yellowish.

Width. — Lectotype: 2.4 mm; paratype: 2.3 mm. The width of 2.7 mm given by SILVESTRI is obviously a misprint.

Head and antennae. — Labral emargination moderately deep and moderately wide, with three teeth. Clypeus moderately convex, weakly impressed towards the labrum; the lateral border widely rounded, with a distinct notch just above the labrum. Headplate smooth and shiny, moderately setiferous up to just above the antennal sockets; vertex hairless. Antennal sockets separated by slightly more than the diameter of a socket, or by slightly less than the length of the 2nd antennomere. Postantennal groove well impressed; the wall in front rather weakly prominent. Vertex rather convex; the vertigial sulcus well impressed, running downward to just above the antennal sockets. Antennae very short, rather stout, scarcely clavate. Pubescence moderate in the proximal antennomeres to rather dense in the distal ones. Length of antennomeres:  $2 = 3 > 4 = 5 < 6$ ; the 6th antennomere as long as the 2nd.

Collum. — (Fig. 19—20). A little wider than the head, subtrapezoidal in dorsal outline. Anterior border faintly concave in the middle, widely rounded more laterally, and again faintly concave along the lateral sides. Posterior border weakly

concave in the middle, widely rounded laterally, and straight or a little concave at the sides. Lateral margin widely rounded, and with an obtuse-angled, narrowly rounded latero-posterior edge. Surface of collum smooth and shiny; at the posterior margin on each side above the lateral edge a weakly defined hairless tubercle. Marginal rim narrow laterally, the premarginal furrow disappearing gradually towards the middle of the anterior border. Transverse convexity of collum even.

Somites. — Constriction rather weak. Prosomites dulled by a fine cellular structure. Stricture rather narrow, anteriorly distinctly demarcated from the prosomite, and dorsally beaded down to the level of the lateral keels. Metatergites smooth, shiny, hairless. Transverse furrow present from the 5th to the 18th somite, distinct, well impressed, remaining separated from the dorsal delimitation of the lateral keels by approximately the diameter of a poriferous keel or less. At the posterior margin of the metatergites a series of up to twelve tubercles. Of these the most lateral are rather well developed and subconical, whereas those of the middle are weakly developed and flattened. In the anterior segments only the lateral tubercles are visible, thus two pairs in the 2nd somite, three pairs in the 3rd somite, etc. In front of the transverse furrow a transverse series of eight small tubercles. Sides smooth or a little rugulose, up to the 4th somite granular and in the subsequent somites granular along the posterior margin. Pleural keels weakly developed. In the 3rd somite represented by a weakly defined ridge; in the 4th somite only a weak swelling, which in the 5th somite is still visible, but is absent from the 6th somite onwards.

Lateral keels. — (Fig. 19—22). Weakly developed. 2nd somite wider than the collum; 3rd somite wider than the 2nd, and about as wide as the 4th. Keels of the 2nd somite much declined, distinctly below the level of those of the 3rd somite. Anterior and lateral borders weakly rounded. Latero-anterior edge about right-angled; latero-posterior edge also about right-angled, narrowly rounded, produced caudad and projecting behind the posterior border of the somite. Marginal rim narrow, but distinct on all sides. Keels of the 3rd and 4th somites somewhat wider dorsoventrally than those of the 2nd. Anterior and latero-anterior borders moderately convex, the lateral borders practically straight. Posterior edges almost right-angled, produced but projecting scarcely caudad of the posterior margins of the somites. Posterior borders of the keels faintly emarginate. Marginal rims moderately thick, distinct. Keels of the 5th and subsequent somites weakly prominent, but very wide dorso-ventrally. Lateral borders widely convex to almost straight. Posterior edges slightly acute-angled, caudally produced, but projecting very slightly behind the border of the somites only in the 15th and subsequent somites. Posterior borders narrow, weakly emarginate. Dorsal delimitation of the keels weakly convex in lateral aspect; the furrow not reaching the stricture, anteriorly curving upwards a little. Ventral demarcation distinct only near the posterior margin of the somites. Pores lateral, located in a rather weak subcircular excavation.

Sternites and legs. — Sternites of middle somites somewhat longer than wide. Cross impressions with the transverse furrow weak in the middle, distinct laterally. The longitudinal furrow absent, but represented by a wide and shallow excavation. No sternal cones. Pubescence sparse. Legs (Fig. 23) very short, stout in particular in the basal podomeres. Pubescence sparse, moderate in the tibiae and tarsi.

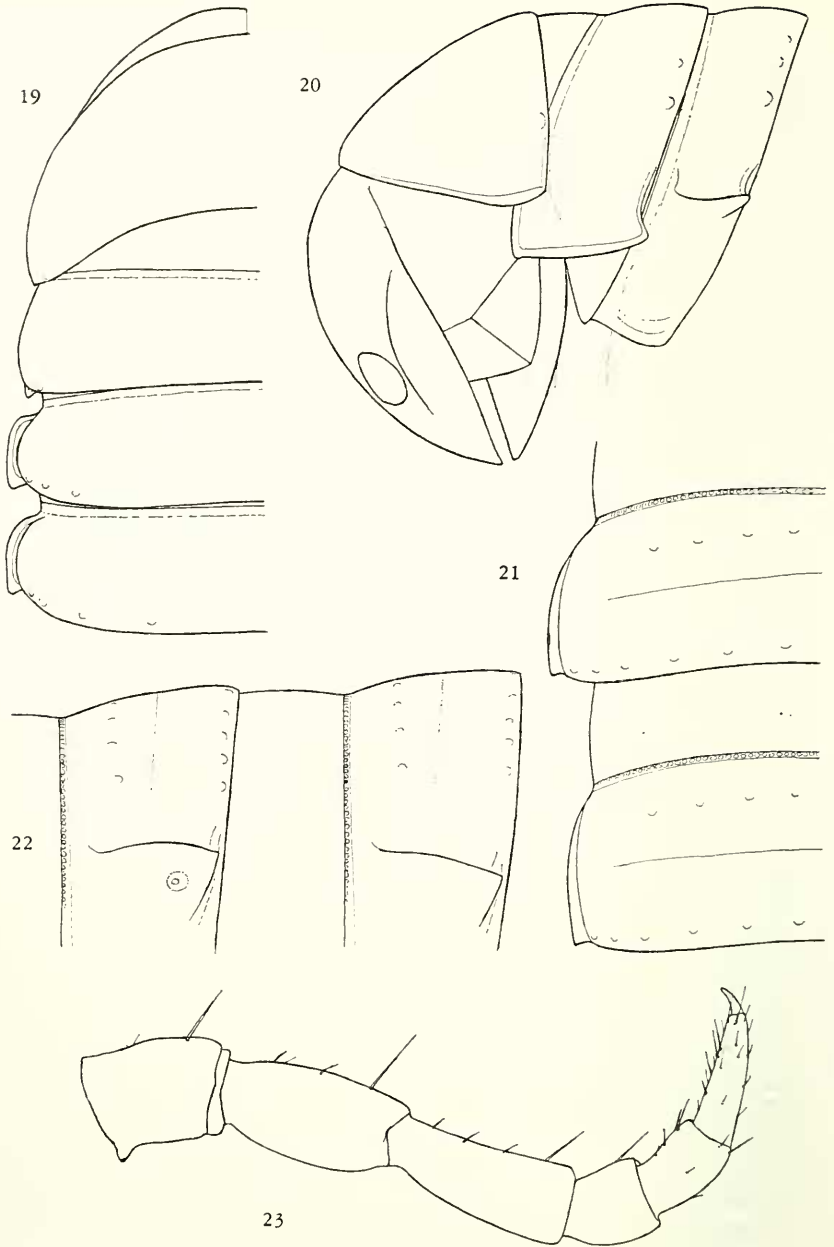


Fig. 19—23. "*Strongylosoma*" *sanguineum* Silv., holotype ♀. 19, left side of head and first four somites, dorsal aspect; 20, left side of head and first three somites, lateral aspect; 21, left side of 10th and 11th somites, dorsal aspect; 22, the same, lateral aspect; 23, leg of middle part of body



Anal somite. — Epiproct very broad at the base rather short. The sides moderately converging towards the broadly truncate end. Preterminal lateral tubercles distinct. The end with a pair of rounded knobs separated by an emargination. Paraprocts rugulose; the marginal rims low, moderately wide. Setiferous tubercles almost obsolete. Hypoproct broad, subtrapezoidal; the sides concave, the end a little convex. Setiferous tubercles coarse but flattened, projecting only slightly behind the margin.

Male — Unknown.

Remarks. — This species may belong in the neighbourhood of *Eustrongylosoma*, although the external morphology differs from the type of the genus in many points, some of which have generic value. In particular the shape of the lateral keels is quite characteristic, and suggests *Walesoma* Verhoeff, an Australian genus belonging to the Antichiropodini. The relative proportions of the podomeres are also noteworthy.

### "*Strongylosoma*" *longipes* Silvestri

1895 *Strongylosoma longipes* Silvestri, *Annali Mus. civ. Stor. nat. Genova* 34: 644.

Material. — The single female specimen in the Genoa Museum has been re-examined and labelled as holotype.

New Guinea: Moroka, 1300 m, II.1893 (coll. L. LORIA), ♀ holotype.

### Description

Colour. — Head reddish brown, the antennae paler; pale reddish brown. Collum and subsequent somites rather dark reddish brown, the ventral side including the sternites pale reddish brown. Legs yellowish brown. SILVESTRI described the colour as "piceo-nigrum, annennis pedibusque rufescentibus"; apparently it has slightly faded.

Width. — 2.9 mm.

Head and antennae. — Labrum with a narrow and weak median emargination, tridentate. Clypeus rather weakly convex, moderately impressed towards the labrum; the lateral borders widely convex, with a wide emargination near the labrum. Headplate smooth and rather shiny, rather densely to moderately setiferous up to just above the upper level of the antennal sockets; vertex with one pair of hairs. Antennal sockets separated by one and one third times the diameter of a socket, or by four sevenths of the length of the 2nd antennomere. Postantennal groove rather deep, the wall in front moderately prominent. Vertex moderately convex. Vertigial sulcus well impressed, running downward to just above the upper level of the antennal sockets. Antennae broken off and lost distad of the 2nd antennomere. Apparently rather stout, according to SILVESTRI almost two times as long as the width of the body. Pubescence moderate to probably rather dense.

Collum. — (Fig. 24—25). Slightly narrower than the head, subelliptical in dorsal outline. Anterior border rather widely and almost evenly rounded. Posterior border widely and weakly emarginate in the middle, laterally faintly convex and with a slight notch above the lateral rounding. Lateral border moderately widely and practically symmetrically rounded. Surface smooth and shiny, with some dis-

persed hairs. Transverse convexity moderate in the middle, a little stronger towards the sides. Marginal rim narrow; the premarginal furrow fading away towards the middle of the anterior border.

Somites. — Constriction rather weak. Prosomites dulled by a fine cellular structure. Stricture of moderate width, sharply demarcated from the prosomite, without any sculpture and more shiny than the prosomite. Metatergites shiny, smooth or with some fine wrinkles; four, or generally two hairs in a transverse row behind the stricture, but these often rubbed off. Transverse furrow well impressed, always extending laterad to the dorsal delimitation of the lateral keels, present from the 5th to the 17th somite, completely absent from the other somites. Dorsad of the lateral keels the metatergites are caudally produced into a pre-marginal crest which completely covers the marginal membrane. Sides finely granular especially in the anterior somites; in the posterior half of the body the granules are located mainly in the ventral and posterior parts of the surface of the sides. Pleural keels in the 2nd to 4th somites represented by curved ridges which are produced caudally into a triangular lappet projecting slightly behind the margin of the somites. In the 2nd and 3rd somites these ridges are complete, in the 4th the anterior part of the ridge is obliterated. In the 5th somite the pleural keel is represented by a weak anterior swelling and a weak ridge near the posterior margin running obliquely upwards. A similar condition, although more weakly developed, is found in the 6th somite. From the 7th somite onwards pleural keels are absent.

Lateral keels. — (Fig. 24—27). Poreformula: 5, 7, 9—19. The keels rather weakly developed. 2nd somite slightly narrower than the collum, and slightly wider than the 3rd; 4th somite wider than the 3rd. Lateral keels of the 2nd somite represented by rather thin and rather low crests, situated below the level of the keels of the 3rd somite. The lateral border scarcely rounded; the posterior border faintly emarginate. Posterior edge acute-angled, pointed, projecting caudad of the posterior border of the somite. Marginal rim narrow, weakly defined. Keels of the 3rd somite dorsoventrally wider than those of the 2nd. Lateral border anteriorly widely rounded, becoming more faintly convex caudally. Posterior edge slightly less acute-angled than in the 2nd somite. Keels of the 4th somite similar to those of the 3rd, but dorsoventrally wider, with a somewhat less acute-angled posterior edge, and projecting slightly less caudad of the posterior margin of the somite. Keels of the 5th and subsequent poriferous somites dorsoventrally wide, the poreless keels about half as wide. Dorsal furrow almost reaching the stricture in the 5th and a few of the subsequent somites, but in general remaining rather widely apart from the stricture. Ventral demarcation distinct only in the caudal quarter of the keels. Lateral border widely rounded in the poriferous keels, faintly rounded to almost straight in the poreless ones. Posterior edges about right-angled or slightly acutely angular, produced posteriorly and projecting caudad of the margin of the somites in all somites up to the 19th. Pores lateral and slightly dorsal, located in a distinct oval excavation.

Sternites and legs. — Sternites of middle somites about one and one quarter times broader than long. Cross impressions without distinct longitudinal furrow, but the longitudinal impression is very wide and shallow. The transverse furrow

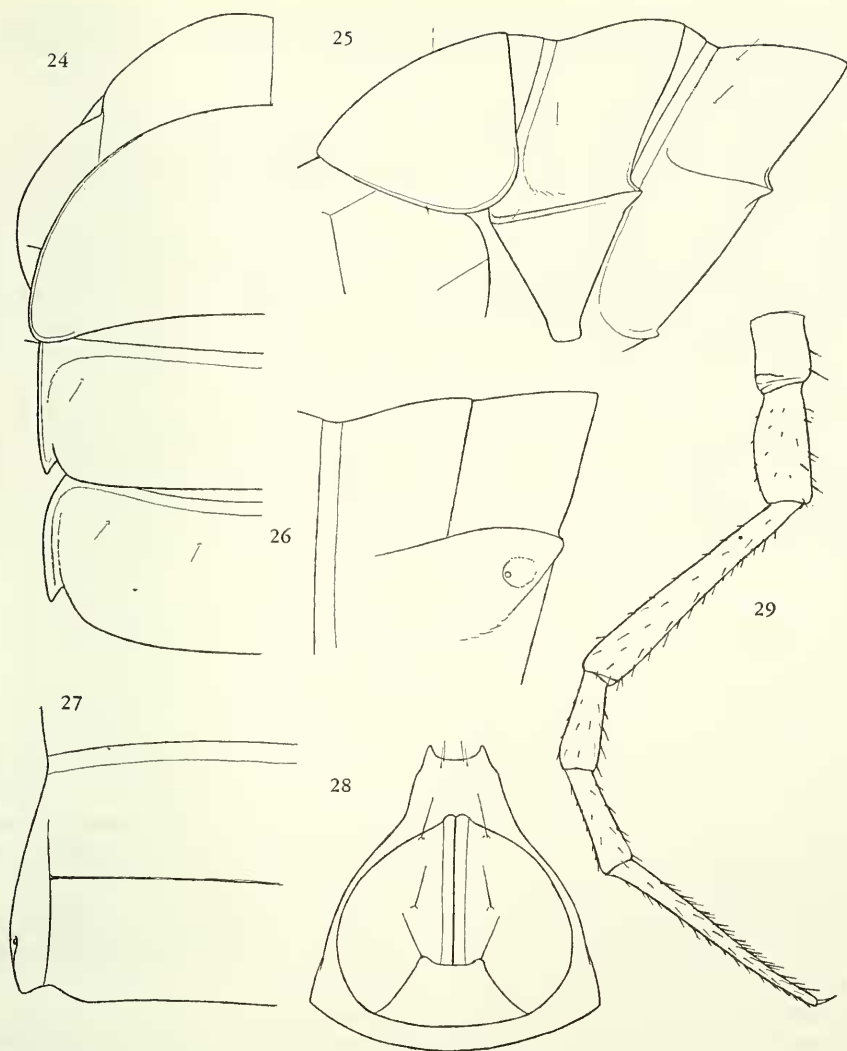


Fig. 24—29. "*Strongylosoma*" *longipes* Silv., holotype ♀. 24, left side of head and first three somites, dorsal aspect; 25, left side of first three somites, lateral aspect; 26, left side of 10th somite, lateral aspect; 27, the same, dorsal aspect; 28, anal somite, ventral aspect; 29, leg of middle part of body

generally with a short interruption in the middle. No sternal cones. Pubescence moderate. Legs (Fig. 29) except those of a few anterior pairs very long and very slender. The posterior legs a little more elongate. Pubescence moderate, in the tarsi rather dense.

Anal somite. — (Fig. 28). Epiproct rather broad, but not thick; the ventral side a little concave. Lateral preterminal tubercles rather distinct. The end with a pair of acuminate cones directed straight backwards. Paraprocts rugulose; the marginal

rims of moderate width, but rather high. Setae on low tubercles. Hypoproct trapezoidal, the setiferous tubercles projecting distinctly. The lateral margins a little concave.

Male. — Unknown.

Remarks. — This species is conspicuous by its aberrant poreformula: 5, 7, 9—19. It seems to be the only species in the family Paradoxosomatidae in which the formula differs from the usual 5, 7, 9—10, 12—13, 15—(18)19. For, it appears that *Xanthodesmus abyssinicus* Cook, 1896, which was recorded to lack pores on the 5th somite, was actually described after an abnormal specimen. A similar formula is found exceptionally in the families Chelodesmidae and Dalodesmidae, and is dominant in the Gomphodesmidae. Actually, the character seems to have little taxonomic value, although former authors readily used it for the distinction of genera.

As only the female is known, little can be said of the relationship of the present species. It may belong in the group of *Eustrongylosoma* and allied genera, but probably represents a distinct generic type judging from several features of its external morphology, such as the development of the transverse metasomal furrow, the elongate legs, etc.

#### Nothrosoma Attems

1929 *Nothrosoma* Attems, Revue Zool. Bot. afr. 17: 277.

Type-species. — *Orthomorpha acuta* Attems, 1914, by original designation.

Diagnosis. — 20 somites; poreformula normal. Head without particulars. Antennae of moderate length, somewhat clavate. Collum distinctly wider than the head.

Somites rather weakly constricted. Stricture of moderate width. Transverse furrow present from the (4th) 5th somite onwards, rather deeply impressed. Pleural keels present on nearly all somites.

Lateral keels strongly developed, those of the 2nd somite only a little below the level of those of the 3rd. Keels on a high level, and raised a little above the middorsal level in most somites. Posterior edges pointed, produced caudad of metasomal margin in all somites. Lateral margins entire.

Sternites of middle somites a little broader than long; no sternal cones. Sternite of the 5th somite of male with one single process or with a pair of tubercles between the anterior legs. Sternite of 6th somite with or without a pair of tubercles between the anterior legs. Legs rather long, rather slender. Tarsal and distal tibial brushes present on the legs of the anterior half of the body of the male, or absent, but otherwise no modifications.

Gonopod coxa of moderate length, widening a little distally. Prefemur rather short, rounded, laterally well demarcated from the femur. Femur comparatively strongly developed, slightly curving caudad, anteriorly with a lamellate expansion. Spermial channel running along the medial side of the femur. No postfemoral region demarcated. Solenomerite arising from the medial side of the end of femur. Solenomerite rather long, almost entirely sheathed by the tibiotarsus, curving laterad and finally proximad. Tibiotarsus consisting of a solenophore only, its



lamina lateralis basally produced proximad into a rounded lobe. Laterad of the base of the solenophore the postfemoral region of the femur is slightly produced distad.

Remarks. — In the strong development of the lateral keels the species of this genus show a striking resemblance with those of the South-East Asian genus *Orthomorpha* Bollman, or with some species of *Pratinus* Attems. The gonopods, however, belong to the eustrongylosomatine type and indicate that the resemblance must be the result of a parallel development.

The wing-like development of the keels also serves to distinguish *Nothrosoma* from all other Papuan Paradoxosomatidae. In the gonopods there is much resemblance with some of the species referred to *Eustrongylosoma*, like *versicolor* (Silv.) or *oenologum* (Silv.), which have, however, rather weakly developed keels.

Key to the species. — The two species now known are very different in size and may be separated as follows.

1. Width of ♂: 1.8 mm. Sternite of the 5th somite of the ♂ with a pair of hairy tubercles between the anterior legs, the sternite of the 6th somite with a similar slightly lower pair between the anterior pair of legs. Tibiotarsus of gonopods terminally split into two serrulate lamellae . . . . *N. acutum* (Att.)
- Width of ♂: 3.8—4.1 mm. Sternite of the 5th somite of the ♂ with a single subquadrate to sub-semicircular process between the anterior legs, the sternite of the 6th somite without processes. Tibiotarsus of gonopods ending in a rounded lamella and a spiniform process . . . . . *N. loriae* (Silv.)

### *Nothrosoma acutum* (Attems)

1914 *Orthomorpha acuta* Attems, Arch. Naturgesch. 80A (4): 191, 192.

1917 *Orthomorpha acuta*; Attems, Nova Guinea 5: 570, pl. 23 fig. 6—8.

1937 *Nothrosoma acutum*; Attems, Tierreich 68: 174, fig. 217.

Distribution. — New Guinea: Mosso.

Remarks. — Although formally described as new in 1917, this species was already characterized in a key to the species of the genus *Orthomorpha*, published in 1914.

### *Nothrosoma loriae* (Silvestri)

1895 *Strongylosoma loriae* Silvestri, Annali Mus. civ. Stor. nat. Genova 34: 645.

Material. — This species was described from two localities: Hughibagu and Moroka. In the Genoa Museum there are a male from the former and a male and a fragment of a male from the latter locality. The male from Moroka has been selected and labelled as lectotype, the other material as paratypes.

New Guinea: Moroka, 1300 m, II.1893 (coll. L. LORIA), ♂ lectotype, fragment of a ♂ paratype. Hughibagu, 19-31.V.1894 (coll. L. LORIA), ♂ paratype.

### Description

Colour. — Head dark castaneous, paler near the labrum. Antennae also paler castaneous, the apex whitish. Collum and subsequent somites dark castaneous, the

keels of the collum scarcely paler, the keels of the 2nd somite and the apices of the keels of the subsequent somites brownish yellow. Ventral side of the body including the sternites pale castaneous. Legs brownish yellow. Anal somite of the same colour as the preceding somites, the epiproct pale castaneous.

Width. — Lectotype: 3.8 mm; paratype: 4.1 mm.

Head and antennae. — Labral emargination moderately deep and rather wide, tridentate. Clypeus moderately convex, moderately impressed towards the labrum; the lateral borders practically straight, with a scarcely noticeable notch above the labrum. Headplate in general smooth and shiny, finely punctulate in the clypeal and frontal areas, rugulose above the labrum. Pubescence rather dense to moderate up to the upper part of the frons; vertex with a pair of hairs. Antennal sockets separated by almost one and one third times the diameter of a socket or by slightly more than half the length of the 2nd antennomere. Postantennal groove well developed, rather deep; the wall in front somewhat inflated. Vertex moderately convex; the vertigial sulcus moderately impressed, running downward to just above the upper level of the antennal sockets. Antennae of moderate length and width, somewhat clavate. Pubescence moderate in the proximal antennomeres to dense in the distal ones. Length of antennomeres:  $2 = 3 > 4 = 5 > 6$ ; the 6th antennomere three quarters of the length of the 2nd.

Collum. — (Fig. 30). Distinctly broader than the head, subtrapezoidal in dorsal outline. Anterior border straight in the middle, laterally very widely and evenly rounded towards an obtuse-angled, narrowly rounded latero-anterior edge. The lateral border short, straight. Posterior border faintly emarginate in the middle, weakly convex more laterally and again faintly emarginate towards the latero-posterior edge, which is about right-angled and very narrowly rounded or almost pointed. Surface of collum smooth and shiny, with a few hairs. Transverse convexity rather weak, the lateral sides a little raised, the posterior part of the lateral side a little inflated. Marginal rim very narrow along the anterior, lateral and posterior sides of the lateral sides of the collum; the rim soon fading away towards the middle of the anterior border.

Somites. — Constriction rather weak. Prosomites dulled by a fine cellular structure. Stricture of moderate width, anteriorly well demarcated from the prosomites, lacking any sculpture. Metatergites shiny; smooth, except on the lateral keels where there are some coarse wrinkles; hairless, except in a few anterior somites where a few hairs may be present. Transverse furrow present from the 5th to the 18th somite, very weak also on the 4th somite. Furrow rather deeply impressed, rather wide, without sculpture, running laterad towards the base of the keels where it splits into several irregular wrinkles. Sides granular up to the 4th somite, smooth in the subsequent somites. Pleural keels well developed. In the 2nd and 3rd somites they are represented by distinct ridges, which are caudally produced into an acute-angled, pointed lappet which projects behind the caudal margin of the somites. In the 4th somite the ridge is anteriorly obliterated, but otherwise similar to those of the preceding somites. In the 5th and subsequent somites there is only a ridge near the caudal margin of the somite, which is caudally produced into a pointed lappet, which in the posterior part of the body becomes thinner and more

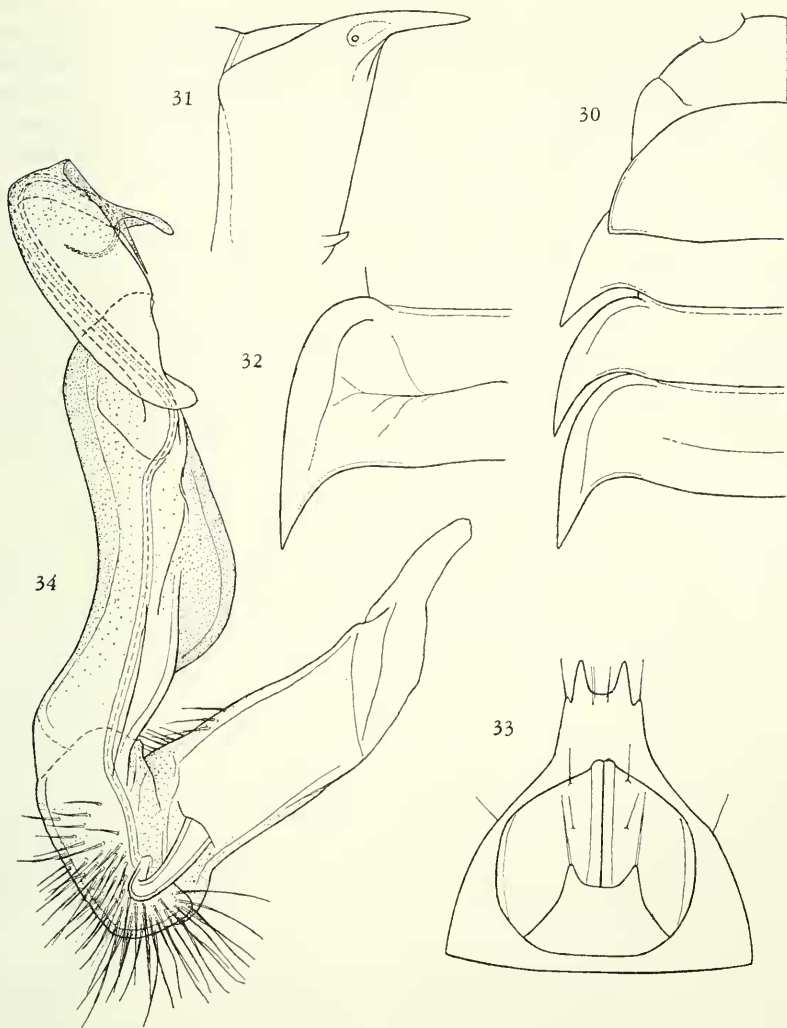


Fig. 30—34. *Notobrosoma loriae* (Silv.), lectotype ♂. 30, left side of head and first four somites, dorsal aspect; 31, left side of 10th somite, lateral aspect; 32, left side of 9th somite, dorsal aspect; 33, anal somite, ventral aspect; 34, right gonopod, medial aspect

spiniform. The lappet is directed a little laterad and a little dorsad, and projects a little caudad of the margin of the somites up to the 18th somite.

Lateral keels. — (Fig. 30—32). Very strongly developed and on a high level. 2nd somite much wider than the collum. 3rd somite wider than the 2nd, subequal in width to the 4th somite. The 5th somite wider than the 4th. Keels of the 2nd somite only a little below the level of those of the 3rd, a little declined. Anterior border and latero-anterior border rather widely rounded, the anterior border shouldered at the base. Lateral border faintly convex. Posterior border practically

straight, concave near the base. Posterior edge very acute-angled, pointed, projecting caudad of the margin of the somite. Lateral margin without indentations, or with the indication of a rounded tooth anteriorly. Keels rather thin, the marginal rim distinct only along the anterior border and the proximal portion of the posterior border. Keels of the 3rd and 4th somites subsimilar to those of the 2nd, but dorso-ventrally thicker. The anterior borders shading off gradually into the lateral ones. The marginal rim more distinctly demarcated, especially in the 4th somite. Keels of the 3rd somite still a little declined, those of the 4th about horizontal. Keels of the 5th and subsequent somites rather strongly shouldered at the base, the anterior margins relatively narrowly rounded, shading off into the faintly convex lateral margins. The posterior margins widely emarginate. The posterior edges acutely pointed, in particular in the keels of the 14th to 18th somites. Keels from the 5th to the 18th somite raised just a little dorsad of the level of the middle of the corresponding tergites. Marginal rims thick, the dorsal furrow disappearing towards the posterior edges; the rims ventrally not demarcated. Pores latero-ventral, located at the anterior end of an elongate ovoid excavation, not visible from above.

Sternites and legs. — Sternites of middle somites a little broader than long. Cross impressions with the longitudinal impression very wide and shallow; the transverse furrow rather broadly interrupted in the middle. Pubescence very sparse. Sternite of the 5th somite with a subquadrate to subsemicircular process between the anterior legs directed a little forward and projecting slightly in front of the sternite. Anterior side of distal end with a thick brush of short hairs. Posterior part of the sternite rather deeply excavated. Sternite of the 6th somite similarly excavated, especially between the posterior legs; at the caudal margin scarcely raised above the metasomal ring. Sternite of the 7th and 8th somites without particulars. Legs long, rather slender, a few anterior pairs a little incrassate. Pubescence moderate, the hairs short, only the tarsi rather densely setiferous. Tarsal and distal brushes present up to the legs of the 11th somite, gradually thinning out, very thin in the legs of the 11th somite, absent in those of the 12th somite. Length of podomeres:  $3 > 6 > 2 > 5 = 4$ ; the 6th podomere four fifths of the length of the 3rd.

Anal somite. — (Fig. 33). Epiproct of moderate length and width, the sides rather weakly convergent. Preterminal lateral tubercles well developed, conical. End of moderate width, with a pair of acuminate cones which are directed very slightly downward. Paraprocts smooth or slightly rugulose; the marginal rims of moderate height and width. Setae not on tubercles. Hypoproct trapezoidal, with a pair of slender, strongly projecting setiferous tubercles.

Gonopods. — (Fig. 34). Coxa of moderate length, rather slender, widening distad. Prefemur short, rounded, laterally distinctly demarcated, the demarcation transverse on the main axis of the telopodite. Femur well developed, expanding halfway in an anterior direction. Laterally a little produced distad of the base of the solenomerite and the tibiotarsus. Postfemoral region not demarcated. Tibiotarsus and solenomerite arising from the medial side of the femur, both forming about three quarters of a circle. End of tibiotarsus with a rounded lamella and a spiniform process.

Female. — Unknown.



Remarks. — Judging from the development of the lateral keels and the general structure of the gonopods, this species is clearly congeneric with *Nothrosoma acutum* (Att.). Like *acutum*, *loriae* has the anterior expansion of the gonopod femur. The curve of the tibiotarsus is identical in both species. The two species are, however, easily separated by the characters given in the key.

### Helicorthomorpha Attems

1914 *Helicorthomorpha* Attems, Arch. Naturgesch. 80A (4): 197.

1916 *Helicorhabdosoma* Brölemann, Annles Soc. ent. Fr. 84: 595.

1933 *Kochliopus* Verhoeff, Ark. Zool. 26A (10): 12.

Type-species. — *Strongylosoma holstii* Pocock, 1895, by original designation. (Type-species of *Helicorhabdosoma*: *Strongylosoma holstii* Pocock, 1895, by original designation; of *Kochliopus*: *Kochliopus trivittatus* Verhoeff, 1933).

Remarks. — To this genus are referable the following species enumerated in chronological sequence:

*Strongylosoma holstii* Pocock, 1895 (Ann. Mag. nat. Hist. (6) 15: 355, pl. 11 fig. 3) — Okinawa.

*Eustrongylosoma orthogona* Silvestri, 1898 (Annali Mus. civ. Stor. nat. Genova 39: 442, fig. 1—2) — New Guinea.

*Strongylosoma moniliforme* Carl, 1912 (Revue suisse Zool. 20: 136, pl. 5 fig. 4—5) — Celebes.

*Strongylosoma philippina* Chamberlin, 1921 (Ann. Mag. nat. Hist. (9) 7: 79) — Philippines.

*Orthomorpha viatoria* Chamberlin, 1924 (Ent. News 35: 173, fig. [1]) — Philippines (imported in the U.S.A.).

*Kochliopus trivittatus* Verhoeff, 1933 (Ark. Zool. 26A (10): 20, pl. 3 fig. 12—14) — China.

*Kochliopus trilobatus* Verhoeff, 1936 (Zool. Anz. 115: 310, fig. 14—15) — Okinawa.

*Helicorthomorpha holstii* ssp. *uncinata* Attems, 1937 (Tierreich 68: 145, fig. 181) — China.

*Orthomorpha hodites* Chamberlin, 1941 (Proc. ent. Soc. Wash. 43: 33, fig. 1) — Philippines (imported in Hawaii).

*Oxidus (Varyomorpha) kosingai* Wang, 1958 (Quart. J. Taiwan Mus. 11: 343, fig. 1) — Taiwan.

In spite of a wide distribution, ranging from China to New Guinea, these ten described species are extremely similar, particularly in their gonopod structure. This led to wrong identifications on the one hand, and to erroneous opinions on synonymy on the other. The evaluation of the specific descriptions is furthermore complicated by the circumstance that one or more species apparently are easily transported by human agency.

It cannot be said that the subsequent authors of the species did their best to reduce the growing confusion. On the contrary, apart from the astonishing frequency of generic misplacement, it is depressing to find that the quality of the most recent descriptions is less than that of the earliest.

The present chaos in the genus can only be disentangled by a thorough revision of the type material of the species involved. Undoubtedly, some of the above-mentioned species will turn out to be only synonyms, as the result of such a revision. It is, however, also clear that *Helicorthomorpha* contains a number of distinct species in spite of the uniformity of the gonopods.

With only the types of one species available at present, it seems useless to enter into a more detailed discussion on the possible status of the described forms.

### *Helicorthomorpha orthogona* (Silvestri)

- 1898 *Eustrongylosoma orthogona* Silvestri, Annali Mus. civ. Stor. nat. Genova 39 : 442, fig. 1—2. (1)  
 1914 *Orthomorpha* (*Helicorthomorpha*) *orthogona*; Attems, Arch. Naturgesch. 80A (4) : 198. (2)  
 1917 *Orthomorpha* (*Helicorthomorpha*) *orthogona*; Attems, Nova Guinea 5 : 570, pl. 23 fig. 1—3. (3)  
 1932 *Helicorthomorpha orthogona*; Attems, Rés. sci. Voy. Indes Or. Néerl. Léopold 3 (12) : 4. (4)  
 1937 *Helicorthomorpha orthogona*; Attems, Tierreich 68 : 145.

Distribution. — New Guinea: Ramoi (1); Jamoer (2, 3); Sakoemi, forest between Lomira and Karakawalla (4).

Material. — In the Genoa Museum there are a male and a female specimen of this species. The male lacks the sternal area of the 5th somite and the gonopods. Possibly SILVESTRI retained the preparations which he may have made of these parts. The male I have labelled as lectotype, the female as paratype.

New Guinea: Ramoi, II.1875 (coll. O. BECCARI), ♂ lectotype, ♀ paratype.

### Description

Colour. — Head and antennae very dark brown, almost black. Labral area and the lower part of the clypeus brown; a pale spot behind the antennal sockets. Somites also blackish, the poriferous keels brown. Sternites and legs blackish brown.

Width. — ♂ : 1.7 mm; ♀ : 2.0 mm.

Head and antennae. — Labrum tridentate; the emargination rather shallow and of moderate width. Clypeus weakly convex, moderately impressed towards the labrum; the lateral borders faintly rounded, without notch near the labrum. Head-plate rugulose in the clypeal area, otherwise smooth and shiny. Pubescence moderate to sparse up to the upper part of the frontal region, the vertex with one pair of hairs. Antennal sockets separated by one and one third times the diameter of a socket or by two thirds of the length of the 2nd antennomere. Postantennal groove wide, moderately deep; the wall in front weakly prominent. Vertex moderately convex; the sulcus moderately impressed, running downward to just above the upper level of the antennal sockets. Antennae of moderate length, rather stout, somewhat clavate. Pubescence moderate in the proximal antennomeres to rather dense in the distal ones. Length of antennomeres: 2 < 3 = 4 > 5 = 6; the 6th antennomere almost nine tenths of the length of the 2nd.

Collum. — A little narrower than the head, reniform in dorsal outline. Anterior border faintly convex in the middle, more so towards the sides. Posterior border widely emarginate in the middle, faintly rounded laterally, without notch above the lateral rounding. Lateral border rather narrowly and asymmetrically rounded. Surface smooth and shiny, hairless. Transverse convexity only a little stronger at the sides. Marginal rim weakly defined, fading away along the anterior border.

Somites. — Constriction rather strong. Prosomites only slightly dulled, rather shiny. Stricture wide, coarsely ribbed dorsally down to halfway the sides, distinctly striate below. Metatergites smooth and shiny, hairless. Transverse furrow present from the 5th to the 17th somite, weakly also in the 18th somite, moderately impressed, without sculpture. Sides rather coarsely granular in the 2nd to 4th somites, smooth in the others. Pleural keels of 2nd to 4th somites represented by rounded ridges, with concavity dorsal, not produced caudad. In the 5th somite only a weak indication of a pleural keel above the posterior leg.

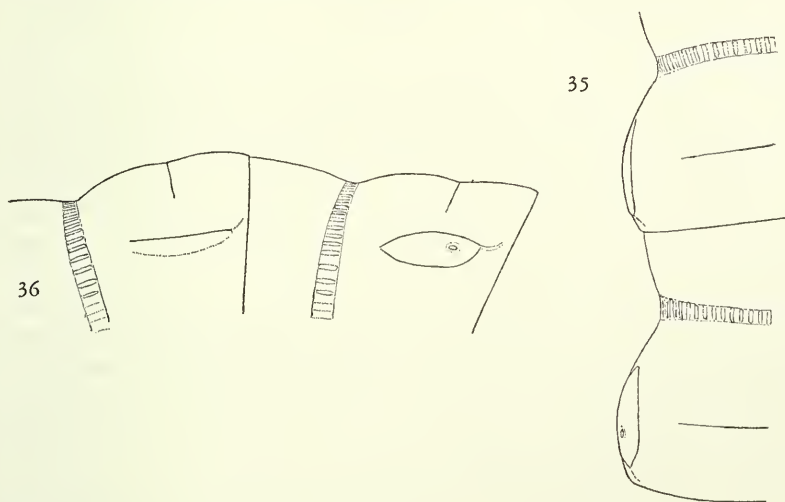


Fig. 35—36. *Helicorthis orthogona* (Silv.), lectotype ♂. 35, left side of 8th and 9th somites, dorsal aspect; 36, the same, lateral aspect.

Lateral keels. — (Fig. 35—36). Weakly developed. 2nd somite a little wider than the collum, and scarcely wider than the 3rd somite. 4th somite as wide as the 3rd. Keels of the 2nd somite below the level of those of the 3rd. Anterior border widely rounded, shouldered at the base and thrust forward. Anterior edge obtusely rounded, with a rounded tooth at the ventral side. Lateral border widely rounded. Posterior edge narrowly rounded, produced and projecting slightly beyond the margin. Marginal rim narrow. Keels of the 3rd and 4th somites represented by weak ridges which are only dorsally demarcated by a curved furrow, concavity upwards. Lateral borders widely convex, posterior edges narrowly rounded, not produced caudad. Keels of the 5th and subsequent somites situated somewhat above the middle of the sides. Poreless keels narrow dorso-ventrally, weakly prominent, only dorsally demarcated by a furrow remaining quite distant from the

stricture. Lateral border widely rounded; the posterior edge faintly prominent. Poriferous keels much wider than the poreless ones, scarcely prominent but demarcated on all sides so as to give them a fusiform outline. Pores lateral and slightly dorsal in a faint excavation of the keels.

Sternites and legs. — Sternites of middle somites amply one and a half times longer than wide. Cross impressions very deeply impressed, the transverse furrow a little deeper than the longitudinal one. No sternal cones. Pubescence moderate; the hairs moderately long. Sternite of 5th somite according to SILVESTRI with a subquadrate process between the anterior legs. Sternite of the 6th somite rather deeply excavate between the posterior legs. Sternite of the 7th and 8th somites without particulars. Legs rather long and moderately slender. Anterior legs a little incrassate. The last two pairs of legs slightly shorter than the preceding legs, but not modified. Pubescence moderate on the ventral side, sparse on the dorsal side of the podomeres; only the tarsi moderately setiferous on all sides. Thin tibial and tarsal brushes present up to about the legs of the 15th somite, thinning out gradually. Length of podomeres:  $6 > 3 > 5 > 4 = 2$ ; 6th podomere slightly longer than the 3rd.

Anal somite. — Epiproct of moderate length, moderately thick; the sides a little concave, rather strongly convergent. Lateral preterminal tubercles hardly prominent. The end straight truncate and without terminal knobs. Ventral side slightly concave. Paraproct a little rugulose. The rims moderately wide, rather low. Setiferous tubercles flattened. Hypoproct broad trapezoidal, with the sides faintly emarginate, and the posterior border straight. Setiferous tubercles small and not projecting.

Gonopods. — See SILVESTRI.

Female. — As usual somewhat more robust than the male, with the constriction weaker. Antennal sockets separated by just over two thirds of the 2nd antennomere. Sternites of the middle somites one and one third times longer than broad. Legs slightly more slender than in the male. Pubescence of legs as in the male but, of course, no brushes. Length of podomeres:  $6 > 3 > 5 > 4 = 2$ ; 6th podomere one and one fifth times longer than the 3rd.

Remarks. — The material from Jamoer described by ATTEMS, 1917, appears indeed to belong to the present species, although there are small differences. The colour of ATTEMS' male specimen differs from the type material by having a series of spots on the prosomal part of the somites. The pleural keels were said by ATTEMS to be absent, although he speaks of a weak swelling above the legs in the 2nd, 3rd and 4th somites. The gonopods as illustrated by ATTEMS differ from the drawing by SILVESTRI only in minor and probably insignificant details of the tibiotarsal apex, probably caused by a slightly different position.

*Helicorthis moniliformis* (Carl), from Celebes, appears to have the gonopods quite similar to those of *orthogona*. This species is, however, much stouter: ♂ 2.0 mm, ♀ 3.5 to 4.0 mm. It has pleural keels only in the 2nd somite and differs notably in coloration.

#### Aschistodesmus Pocock

- 1898 *Aschistodesmus* Pocock, in: WILLEY, Zool. Res. New Britain, New Guinea, Loyalty Is. elsewhere: 69.  
 1964 *Aschistodesmus*; Jeekel, Nova Guinea, Zool. 29: 107.



Type-species. — *Aschistodesmus maculifer* Pocock, 1898, by monotypy.

Remarks. — In 1964 I revived the name *Aschistodesmus* for the Papuan species previously assigned to *Akamptogonus* Attems. The genus is characterized mainly by gonopod characters. The species described by SILVESTRI was based on a female specimen. Nevertheless there is little doubt that *Strongylosoma albipes* Silv., judging the external features, belongs to *Aschistodesmus*.

### *Aschistodesmus albipes* (Silvestri)

1895 *Strongylosoma albipes* Silvestri, *Annali Mus. civ. Stor. nat. Genova* 34: 644.

Material. — In the Genoa Museum there is a single female specimen of this species, which I have labelled as holotype.

New Guinea: Moroka, II.1893 (coll. L. LORIA), ♀ holotype.

### Description

Colour. — Head castaneous; the antennae slightly paler, a little infusate towards the apex, the apex itself whitish, the articulations yellowish. Collum and subsequent somites castaneous, gradually turning more dull coffee-brown in the middle and posterior somites. Keels of the poriferous somites a little paler. Venter pale brown to yellowish brown. Sternites and legs pale yellowish. Anal somite dark coffee-brown, the paraprocts paler; hypoproct yellowish brown.

Width. — 2.0 mm.

Head and antennae. — Labrum weakly and widely emarginate, tridentate. Clypeus moderately convex, weakly impressed towards the labrum; the lateral borders almost straight, scarcely notched near the labrum. Headplate smooth, polished, sparsely setiferous in the clypeal area, the frontal region with only a few hairs; vertex hairless. Antennal sockets separated by slightly more than the diameter of a socket, or by five eighths of the length of the 2nd antennomere. Post-antennal groove well impressed; the wall in front moderately prominent. Vertex moderately convex; the vertigial sulcus moderately impressed, running downward to just above the level of the antennal sockets. Antennae rather short, stout, distinctly clavate. Pubescence moderate in the proximal antennomeres to rather dense in the distal ones. The antennomeres gradually diminishing in length from the 2nd to the 6th; the 6th antennomere about three quarters of the length of the 2nd.

Collum. — (Fig. 37—38). About as wide as the head, subelliptical in dorsal outline. Anterior border weakly convex in the middle, gradually a little more convex towards the lateral border. Posterior border widely and weakly emarginate in the middle, straight more laterally, practically no notch near the lateral rounding. Lateral border moderately widely rounded, the rounding subelliptical and symmetrical. Surface smooth, polished, hairless. Transverse convexity weak in the middle, distinctly stronger towards the sides. Marginal rim laterally narrow, fading away towards the middle of the anterior border.

Somites. — Constriction moderate. Prosomites slightly dulled by a fine cellular structure. Stricture rather narrow, without sculpture, not demarcated from the

prosomes. Metatergites smooth, polished, hairless. Transverse furrow present from the 5th to the 17th somite, weak in the middle somites to very weak in the posterior somites. From the transverse furrow goes out a short linear median impression. Sides smooth, shiny, in none of the somites granular. Pleural keels present only in the 2nd and 3rd somites, represented by outstanding lappets, which in the 3rd somite are posteriorly produced but do not project behind the posterior margin of the somite.

Lateral keels. — (Fig. 37—40). Rather well developed. 2nd somite about as wide as the collum. The 3rd scarcely narrower than the 2nd. The 4th somite wider than the 3rd and narrower than the 5th. Keels of the 2nd somite on a low

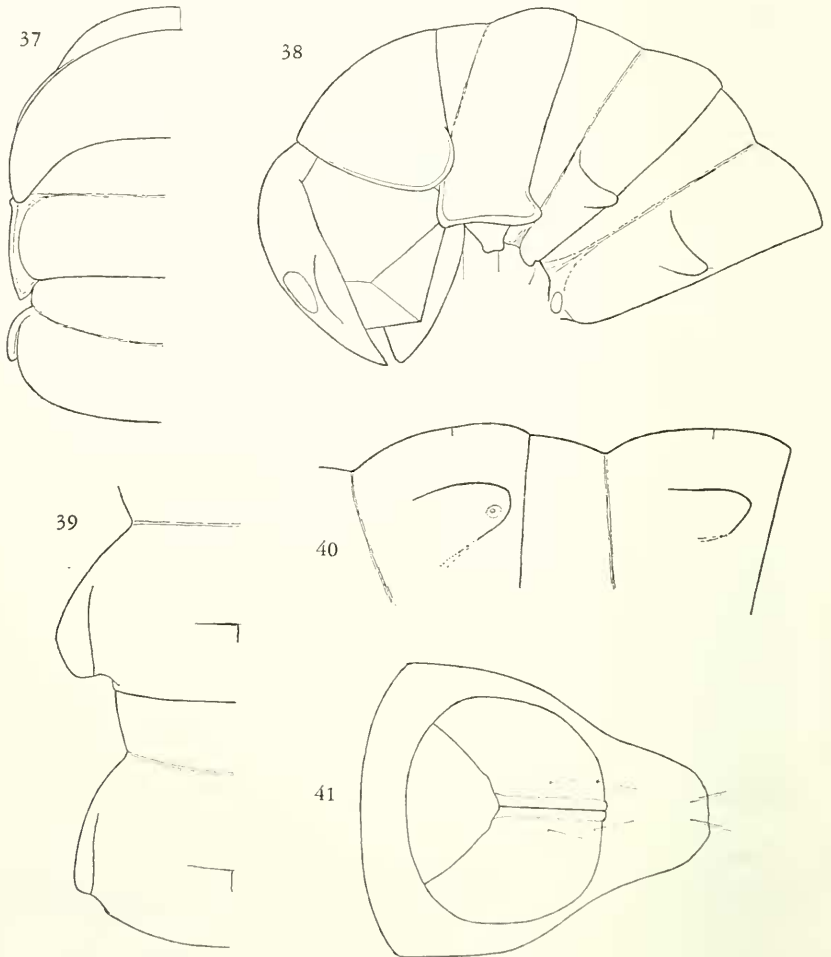


Fig. 37—41. *Aschistodesmus albipes* (Silv.), holotype ♀. 37, left side of head and first three somites, dorsal aspect; 38, left side of head and first four somites, lateral aspect; 39, left side of 10th and 11th somites, dorsal aspect; 40, the same, lateral aspect; 41, anal somite, ventral aspect

level and strongly declined. Anterior border widely rounded, the latero-anterior edge with a rounded lateral knob. Lateral border weakly convex. Posterior border rather narrowly rounded. The latero-posterior edge about right-angled, very narrowly rounded, distinctly projecting caudad of the margin of the somite. Marginal rim moderately thick, dorsally well demarcated on all sides of the keel. Keels of the 3rd somite distinctly higher up the sides than those of the 2nd, dorso-ventrally much thicker. Lateral border widely rounded, the posterior edge right-angled, subacuminate, slightly projecting caudad of the margin of the somite. Keels of the 4th somite still thicker dorso-ventrally; the lateral border more widely rounded. The posterior edge obtuse-angled, scarcely produced caudally. Keels of the 5th and subsequent somites thick dorso-ventrally and somewhat inflated. The poriferous keels extending distinctly more laterad than the poreless. Lateral border weakly convex, in the poriferous keels more strongly rounded in the caudal half. Posterior edges mostly obtuse-angled, in none of the somites projecting caudad of the margins of the somites. Dorsal furrow of keels disappearing at a wide distance from the waist. Pores lateral in an almost circular excavation. Ventral demarcation of the keels distinct only in the caudal half of the keels.

Sternites and legs. — Sternites of middle somites one and one third times as long as broad. Cross impressions well developed, the transverse furrow a little deeper than the longitudinal. Pubescence practically absent. Legs of moderate length, moderately thick, with the prefemur of all podomeres thickest. Pubescence sparse, only a little more dense in the tarsi. Length of podomeres:  $6 = 3 > 2 > 5 > 4$ .

Anal somite. — (Fig. 41). Epiproct broad, moderately thick, parabolically rounded, the end slightly and irregularly undulate, ventral side slightly concave. No setiferous tubercles. Dorsally, at the base of the hypoproct a transverse depression. Paraprocts a little rugulose, shiny. The marginal rims of moderate width and of moderate height. Setiferous tubercles scarcely noticeable. Hypoproct broad triangular, the sides faintly convex, the posterior edge obtuse-angled. Setiferous tubercles projecting slightly.

Male. — Unknown.

Remarks. — Among the other species of *Aschistodesmus* known from New Guinea this one is characterized by its small size and its uniform dark colour. Its relationship can be determined only after discovery of the male.

### *Hoplatessara luxuriosa* (Silvestri)

1895 *Strongylosoma luxuriosum* Silvestri, *Annali Mus. civ. Stor. nat. Genova* 34: 643.

1956 *Hoplatessara luxuriosum*; Jeekel, *Ent. Ber., Amst.*, 16: 184, fig. 1—4.

Material. — In 1956 I could examine only the head, the last ten somites and the gonopods of a single male specimen of this species. The type series in the Genoa Museum consists of a male specimen lacking the 8th and 9th somites, a female specimen, and fragments of a male and a female. The first mentioned male has now been labelled as lectotype, the other specimens as paratypes. The description and drawings published in 1956 were made after the available parts of the lectotype; the description is supplemented below.

New Guinea: Sorong (coll. L. M. D'ALBERTIS), ♂ lectotype, fragment of ♂ paratype, ♀ paratype, fragment of ♀ paratype.

## Description

Colour. — Anterior part of collum blackish, the posterior third reddish; keels of collum and the anterior margin narrowly reddish.

Width. — Lectotype ♂ : 3.4 mm; paratype ♂ : 3.5 mm; paratype ♀ : 4.8 mm; paratype ♀ : 4.9 mm.

Head. — Lateral border of clypeus straight, with a distinct notch near the labrum. Vertex hairless.

Collum. — Distinctly wider than the head, subtrapezoidal in dorsal outline. Anterior border faintly concave, widely rounded more laterally and straight or faintly concave along the sides. Posterior border widely emarginate, widely rounded more laterally. Lateral border widely and symmetrically rounded. Surface smooth and shiny, hairless. Transverse convexity weak in the middle, rather strong towards the sides. Marginal rim laterally narrow, the premarginal furrow fading away towards the middle of the anterior border.

Somites. — Transverse furrow of metatergites present from the 5th somite onwards. Sides of the anterior somites somewhat granular. Pleural keels represented by faint ridges on the 2nd and 3rd somites, by faint swellings on some subsequent somites.

Lateral keels. — 2nd somite a little wider than the collum. The keels represented by narrow ridges, with the anterior border rather strongly rounded, the latero-anterior edge obtuse and with a weak tooth, the lateral border faintly concave anteriorly and widely convex posteriorly, the latero-posterior edge obtusely rounded, the edge projecting very slightly behind the caudal margin of the somite. 3rd and 4th somites of subequal width to the 2nd. The keels dorso-ventrally wider than those of the 2nd somite. The posterior edges obtusely angular, not produced, the lateral border widely rounded. Keels demarcated only dorsally by a furrow which in lateral aspect is concave in the 3rd somite and almost straight in the 4th.

Sternites and legs. — Sternite of 5th somite with a subpentagonal process between the anterior legs, projecting slightly in front of the anterior border of the sternite. The distal end of the process with a brush of short setae on anterior side. Transverse furrow behind the process rather weakly developed, the posterior part of the sternite almost normal. Sternite of 6th somite not raised above the ventral level of the metasomite. Sternite of 7th somite without particulars. Tarsal and distal tibial brushes present at least up to the legs of the 6th somite.

Female. — Much more robust than the male. Antennal sockets separated by four fifths of the length of the 2nd antennomere. Pleural keels more distinctly developed, in the 3rd and 4th somites represented by distinct rounded ridges. Sternites about as long as wide. Legs more slender than those of the male, pubescence of legs as in the male, but without brushes.

Remarks. — As was stated already in 1956, the locality of this species is probably erroneous. It seems likely that the material was collected somewhere in Queensland.

## REFERENCES

- ATTEMS, C., 1937. Myriapoda 3. Polydesmoidea I, Fam. Strongylosomidae. Das Tierreich 68 : i—xxii, 1—300.



- CHAMBERLIN, R. V., 1945. On some Diplopods from the Indo-Australian Archipelago. *Am. Mus. Novit.* 1282 : 1—43.
- JEEKEL, C. A. W., 1956. On the generic status of *Strongylosoma luxuriosum* Silvestri, 1894 from New Guinea (Diplopoda, Polydesmida, Strongylosomidae). *Ent. Ber., Amst.*, 16 : 184—188.
- , 1964. Notes on the genus *Akamptogonus* Attems, with descriptions of a new genus and species from New Guinea (Diplopoda, Polydesmida). *Nova Guinea, Zool.*, 29 : 105—113.
- SILVESTRI, F., 1895. Chilopodi e Diplopodi della Papuasias. *Annali Mus. civ. Stor. nat. Genova* 34 : 619—659.
- , 1898. Alcuni nuovi Diplopodi della N. Guinea. *Annali Mus. civ. Stor. nat. Genova* 39 : 441—450.